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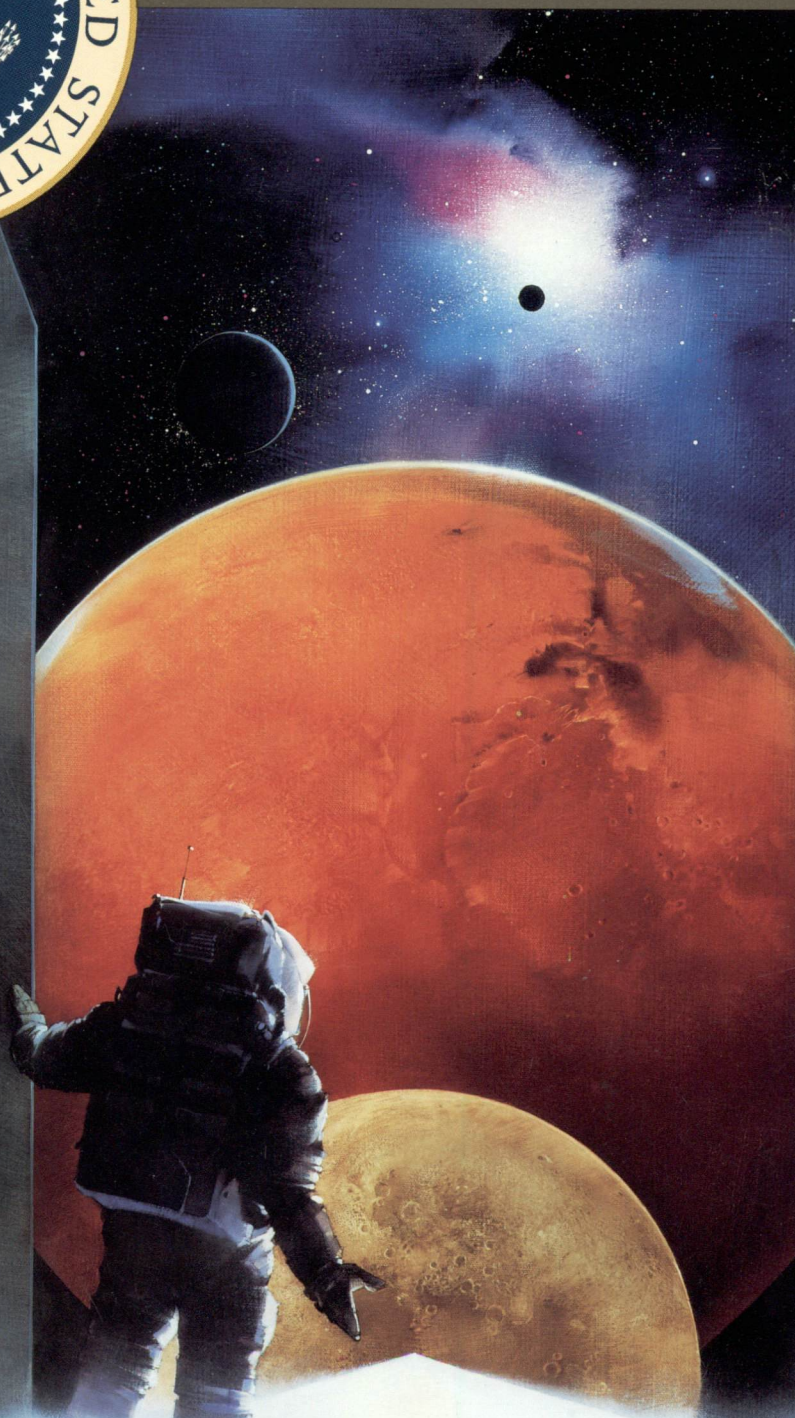
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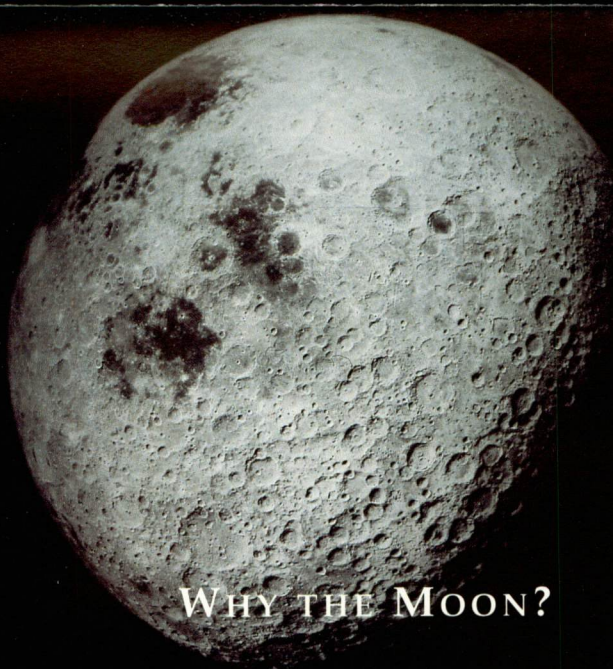
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AMERICA AT THE THRESHOLD



AMERICA'S
SPACE EXPLORATION INITIATIVE



WHY THE MOON?

Earth's closest neighbor in space, the Moon, is surprisingly complex. It is an object for detailed exploration, a platform from which to observe and study the universe, a place to live and work in the environment of space, and a natural source of materials and energy for an emerging space-based economy.

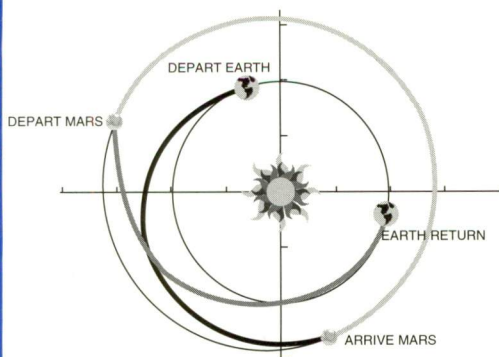
The Moon offers a record of four billion years of planetary history. Its violent birth and history of bombardment from space is closely related to events on the early Earth. The Moon provides a natural laboratory for detailed study of geology and planetary formation, the output of our Sun over its lifetime, and the elements of our universe. The Moon's two-week night, crystal clear, airless sky and stable ground provide a superb platform for astronomy.

Just three days journey from Earth, the Moon is the nearest object in space where people can live under conditions similar to those we will face on other planets. Thus, the Moon is a natural test bed to prepare for missions to Mars by conducting simulations, systems testing, operations and studying human capabilities.

The Moon is a rich source of materials and energy for use in space. Abundant metals, ceramics and recoverable amounts of hydrogen, carbon and oxygen can provide propellant and human life support from the lunar surface. The two-week daytime provides abundant solar energy. Our Moon provides a rich scientific and economic waystation for human expansion into the solar system.

TYPICAL CHEMICAL PROPULSION MISSION

TOTAL MISSION: 919 DAYS
2014



MISSION TIMES

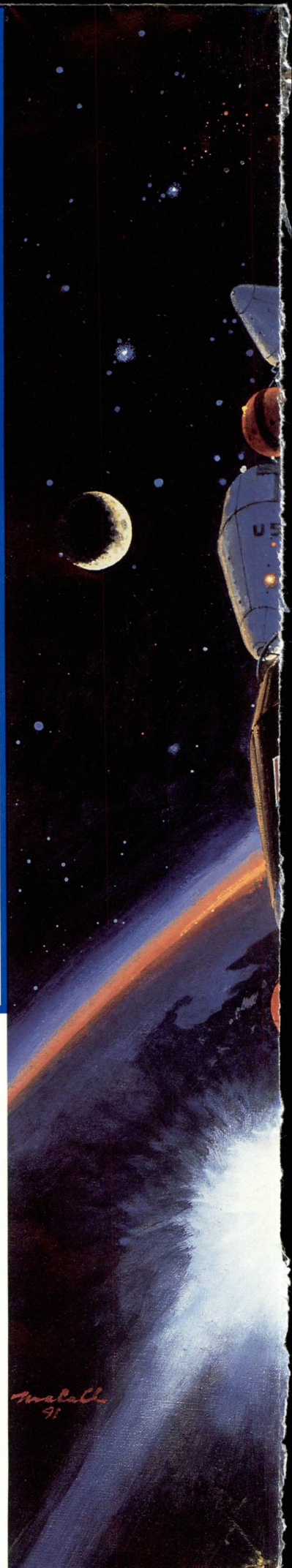
OUTBOUND — 224 days
STAY — 458 days
RETURN — 237 days

THE PATHWAY TO MARS

At its closest point, Mars is 35 million miles from Earth. This distance increases to 250 million miles when we are on opposite sides of the Sun. By comparison, the Moon is only a quarter million miles away — a three-day journey. The challenges of a Mars expedition stem from the distances, the long times away from Earth, the environment of deep space, and Mars' unique characteristics.

A total Mars mission duration depends on both the round trip travel time and the time spent on the planet's surface. A typical conventional chemical propulsion mission would take about 250 days one-way with a surface stay of about 500 days to allow the planets to realign before returning home. Advanced nuclear propulsion technologies can shorten the trip to 160 days or less each way. This would allow more time for exploring Mars and provide longer launch windows, all with lower propellant mass.

Shorter travel times are desirable to reduce the impact of the deep space environment on the crew and mission equipment. During the space voyage, expected hazards include radiation from galactic cosmic rays and solar flares, the lack of normal



THE SPACE EXPLORATION INITIATIVE

Apollo 11 first placed America on the Moon on July 20, 1969. This extraordinary accomplishment confirmed the United States' technological ascendancy for a generation. On the 20th anniversary of Apollo 11, President George Bush announced a new vision for America in the 21st century — a vision that will return mankind to the Moon to stay, and onward to land humans on Mars by 2019. This vision, the Space Exploration Initiative, represents the greatest challenge the world has ever known.

Following preliminary studies by NASA, Vice President Quayle, as Chairman of the National Space Council, directed an extensive Outreach Program. The Outreach Program challenged Americans to search for new and innovative ideas and technologies to make space exploration safer, faster, better and more affordable.

Vice President Quayle tasked former Apollo astronaut Lieutenant General Thomas Stafford, USAF (Ret.), to assemble

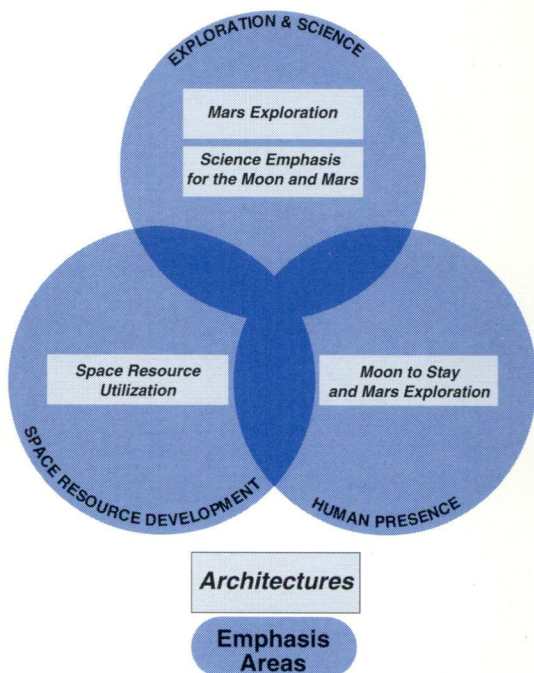
"the Synthesis Group," an independent panel of recognized experts. Staffed by the best technical talent from across the United States government, industry and academia, the Synthesis Group was chartered to assess the widest possible range of innovation from all available sources, and to define technology priorities, early milestones and alternative architectures for the Space Exploration Initiative.

The four architectures developed by the Synthesis Group provide alternatives. All are real pathways for returning to the Moon and then onward to Mars. *All architectures offer three common areas of emphasis: human presence, exploration and science, and space resource development for the benefit of Earth.* The alternative architectures are covered in detail in the Synthesis Group's report. This brochure highlights the common needs and the challenges we face.

The challenges of the Space Exploration Initiative are great, but so is the quality of American talent and ingenuity, and so is the leadership of the American people. And . . . it is America's destiny to lead.



Space Exploration Initiative





*"... humanity's destiny is
to strive, to seek, to find.
... it is America's destiny to lead."*

George Bush

THE CHALLENGE

In 1989, President George Bush challenged America in a way no one has challenged us before: "Back to the Moon to stay, and onward to Mars." In the history of the human race, no challenge has been so great, and no goal so distant. Likewise, there has never been a nation like ours, nor an opportunity so promising.

Ours is a rapidly changing world. To remain competitive and maintain world leadership in the 21st century, America will need the best trained and educated work force, the most advanced technology and the strongest leadership. And we will need goals that challenge our abilities far beyond what we've experienced before.

The Space Exploration Initiative is a vision for the 21st century. It is a vision of

America reaching beyond itself, and onward, beyond the very bounds of this planet to an entirely new world. On the way there, we will reap the real, tangible benefits of space exploration.

Space is clearly our most challenging frontier. Enroute to Mars, we will explore the Moon, advance Earth sciences, and develop new, innovative technologies. We can tap lunar, Martian and solar energy resources as we explore the heights of human talent and ability. Along the way, American drive, initiative, ingenuity and technology — all those things that have made this nation the most successful society on Earth — will propel us toward a future of peace, strength and prosperity.

The challenge is before us. Here is how we begin.

THE SPACE EXPLORATION INITIATIVE

"VISIONS FOR AMERICA"

The Space Exploration Initiative provides a focus that will allow the United States to seize control of our destiny in space. In doing this, six "visions" guide and direct our space efforts. These are:

Knowledge of our Universe. We strive to understand the origin and history of our Solar System, the origin of life, and the ultimate fate of our universe. People are the best explorers, but they often need machines to help. *The Space Exploration Initiative is an integrated program of missions by humans and robots to explore, to understand, and to gain knowledge of the universe and our place in it.*

Advancement in Science and Engineering. Returning to the Moon, and onward to Mars will require the best engineering and scientific talent our nation can muster. Through a long-range commitment to space, we will stimulate our national education system and inspire students to learn. Motivated students are essential to excellence in education. *The Space Exploration Initiative will motivate and inspire the new generations on which our future as a nation depends.*

United States Leadership. The Space Exploration Initiative provides us with an opportunity to re-establish and maintain American pre-eminence in technological innovation and space leadership. Other nations have seized the initiative and become leaders in a tradition of space exploration that America pioneered. *Leadership cannot be declared ... it must be earned.*

Technologies for Earth. America's recent history has demonstrated that our space program stimulates a wide range of technological innovations that find abundant application in the consumer marketplace. Space technology has revolutionized and improved our daily lives in countless ways, and it should continue to do so. Energy from space, advances in solar power and fusion fuels, new useful materials for advanced communications, new resources, medical breakthroughs, and greater insight into the human potential

are direct benefits we can expect. *The Space Exploration Initiative provides focused goals to drive practical and beneficial technological change.*

Commercialization of Space. Initiatives by the private sector are goals of our National Space Policy. Space is a limitless, untapped source of materials and energy, awaiting industrial development for the benefit of humanity. *Commercial products, such as zero-gravity-derived materials, and service industries like advanced global communications services, all become increasingly feasible and profitable once routine, reliable and affordable access to space is available.*

Strengthened U.S. Economy. New technologies open new markets. An investment in the high technology needed for space exploration will maintain and improve America's share of the global market and enhance our competitiveness and balance of trade. It will also directly stimulate the scientific and technical employment bases in our country, sectors whose health is vital to our nation's economic security. *The Space Exploration Initiative is an investment in the future of America.*

But, Why Now? As Americans, we must ask ourselves — What will be our role in the future? Will we lead? Will we follow? Or, will we step aside? Leading world powers have always explored and profited greatly from new frontiers. Space is the new frontier of our industrialized world in the 21st Century. The Space Exploration Initiative will restore America to pre-eminence as the world's space leader. By offering both a direction and a purpose, it will rejuvenate our sense of challenge, of competitiveness and of national pride. The Space Exploration Initiative is a positive social endeavor. In a world of uncertainty, it has the capacity to inspire people, to stimulate them, and to cause them to reach deep inside to find the very best they have to offer. *In America's history, our focused, goal-driven initiatives have a spectacular record of success and benefit to all humanity. We must not settle for less in our future.*

TECHNOLOGIES FOR SPACE AND FOR EARTH

Since our ancestors first gazed into the skies, the concept of space exploration has fueled the imagination, challenging mankind to understand the unknown, to explore . . . and to learn. In America today, scientific literacy is declining. Our students no longer lead the world in earning degrees in science, engineering and mathematics. For America's future, these trends must be reversed. The Space Exploration Initiative presents challenges and new goals. It will rekindle public interest in science. Once again, space exploration will excite the nation's imagination. It will motivate our educators to teach, and our public and students to learn, and then to innovate.

Technology will provide the tools necessary for cost effective and safe exploration of the Moon and Mars. While the Initiative requires a broad range of technologies, power and transportation are both of primary importance. The safe use of nuclear energy for space propulsion can have the same benefits for space propulsion that jet propulsion had for air travel. Improved solar energy collectors and powerful new lightweight batteries will be vital tools as well. A



conventional heavy lift launch vehicle will be needed to ferry large components and supplies to Earth orbit in preparation for distant voyages. For surface operations, advanced regenerative fuel cells will be critical for landers, rovers and lunar spacecraft.

Crews will require air, water and food, along with protection from galactic and solar radiation in space. Recycling of air, food and water will be necessary, leading to improved technology for such purposes on Earth.

Communication with Earth will be challenging. Spaceflight will require modern, lightweight computers and electronics. Optical communications will enhance operations between Mars, Moon and Earth.

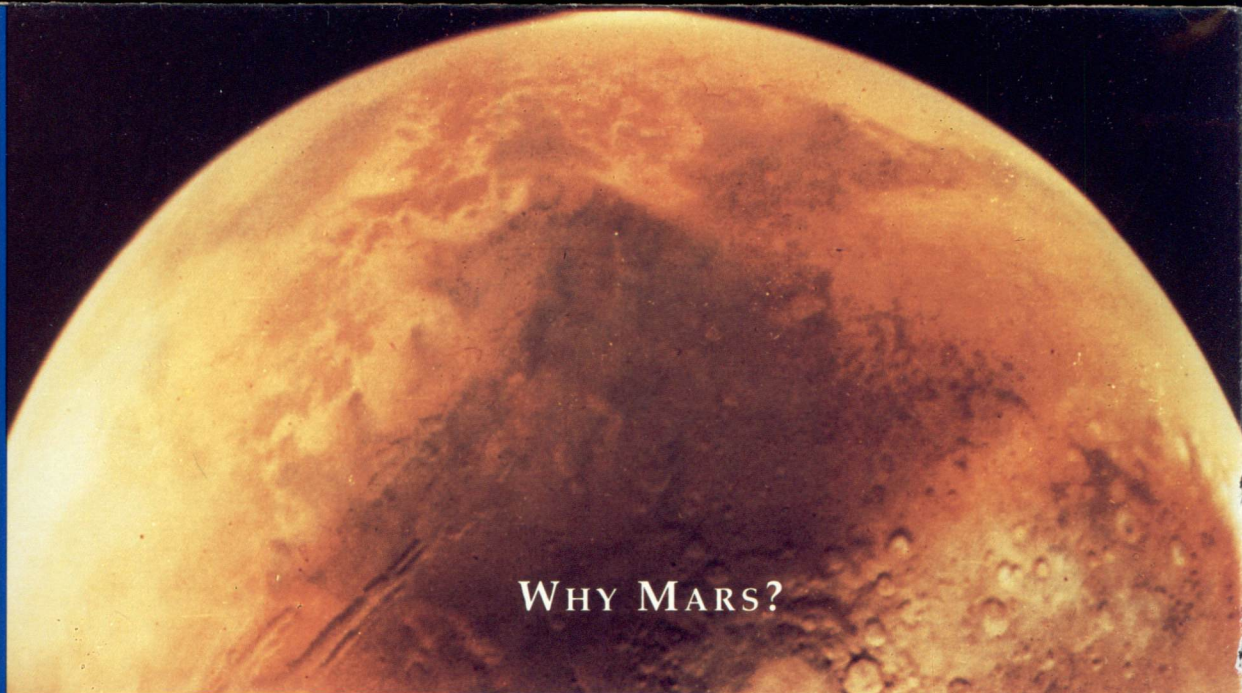


Advanced robotics will be needed to extend the astronauts' range into new locations, such as the polar ice caps of Mars or deep craters of the Moon. The use of video and tactile sensors to control robotic presence will allow exploration without exposing the astronauts to undue risk. Lunar mining and processing equipment will provide resources to supplement those delivered from Earth. We expect to recover rare commodities such as Helium-3 from the Moon for the benefit of Earth.

In Columbus' time, exploring the New World mandated self-reliance. Similarly, independence from Earth's normal support systems will be key to extended living on the Moon and Mars. We must learn to use available resources to generate air, water, food and fuel, as well as to build permanent habitats.

These concepts represent but a few of the many technological advances we expect from the Space Exploration Initiative. Ultimately, we will learn to use the vast resources of space to support and improve life here on Earth. This Initiative will open the Solar System's energy and material resources to relieve the stress on Earth's environment from population growth, and provide our world with limitless resources for the future.





WHY MARS?

Of all the planets in our Solar System, Mars is the most like Earth. With a thin atmosphere, weather, seasons and a 25-hour day, Mars has a diverse and complex surface, including ice and evidence of the former presence of water. Although conditions on Mars may not support life now, evidence suggests that Mars was warmer, wetter, and had a much denser atmosphere early in its history. Life may have existed. If so, fossil evidence may be found.

Mars has undergone a complicated geologic evolution. Its surface contains vast regions of sand dunes, gorges carved by running water, a polar ice cap, huge volcanos and gigantic canyons. Olympus

Mons is three times as tall as Mount Everest, and larger than Montana. Valles Marineris is three times as deep and ten times as long as the Grand Canyon. Understanding the periodic changes in climate that have occurred on Mars will enable us to understand the Earth's climate and future behavior, a topic vital to the survival of life on Earth.

With a land area equal to Earth's, Mars offers an unexplored wealth of natural resources. The essentials for life support, including air and water, can be manufactured on the Martian surface. As Earth's assets dwindle, Mars may offer resources mankind will need.

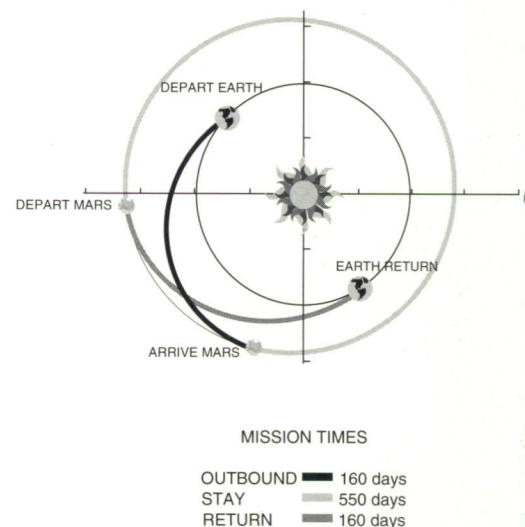
gravity, psychological stress from long term isolation, and equipment degradation.

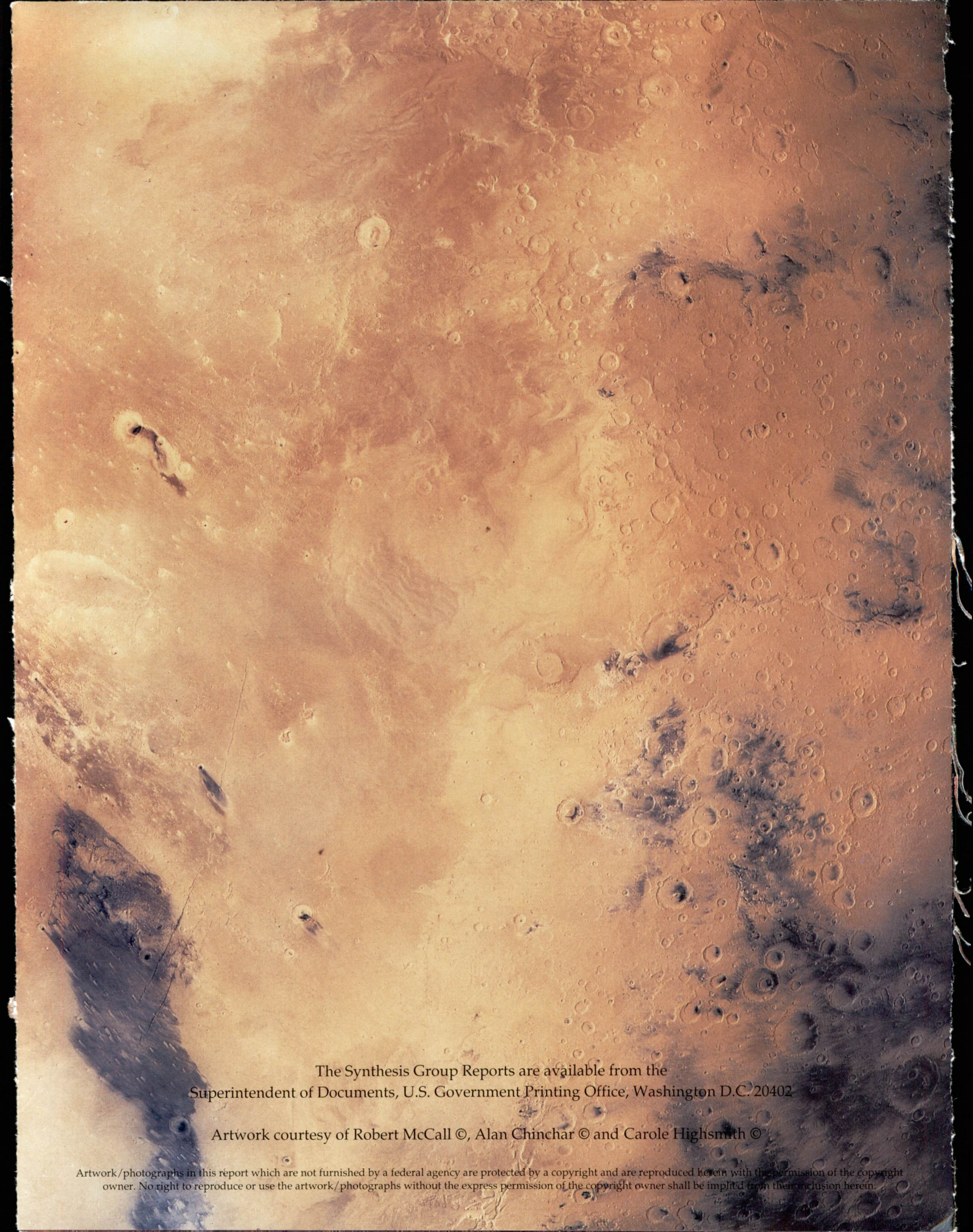
As a result of the challenges of a Mars trip, several hundred tons of equipment and fuel are required for a Mars expedition. Thus, we will require a conventionally powered heavy lift launch capability to minimize assembly in Earth orbit. From Earth orbit to Mars, nuclear propulsion technology will allow reduced weight, approximately one-half that of chemical systems, and achieve faster interplanetary trip times. At Mars, we will need Earth-independent operations, since round trip communications times will vary from 10 to 40 minutes. We will need improved long-term life support systems that operate for lengthy time periods without resupply.

The planetary surface of Mars provides challenges different from those of the Moon. The planet is large — about one-third the size of Earth. It has a diverse topography, with 80,000-foot volcanos and canyons as long as our continent is wide. Mars' atmosphere is mostly carbon dioxide and is known to have periodic dust storms. These features will require unique power systems, landers, rover vehicles and human habitats.

TYPICAL NUCLEAR PROPULSION MISSION

TOTAL MISSION: 870 DAYS
2014-SHORTENED TRANSIT





The Synthesis Group Reports are available from the
Superintendent of Documents, U.S. Government Printing Office, Washington D.C. 20402

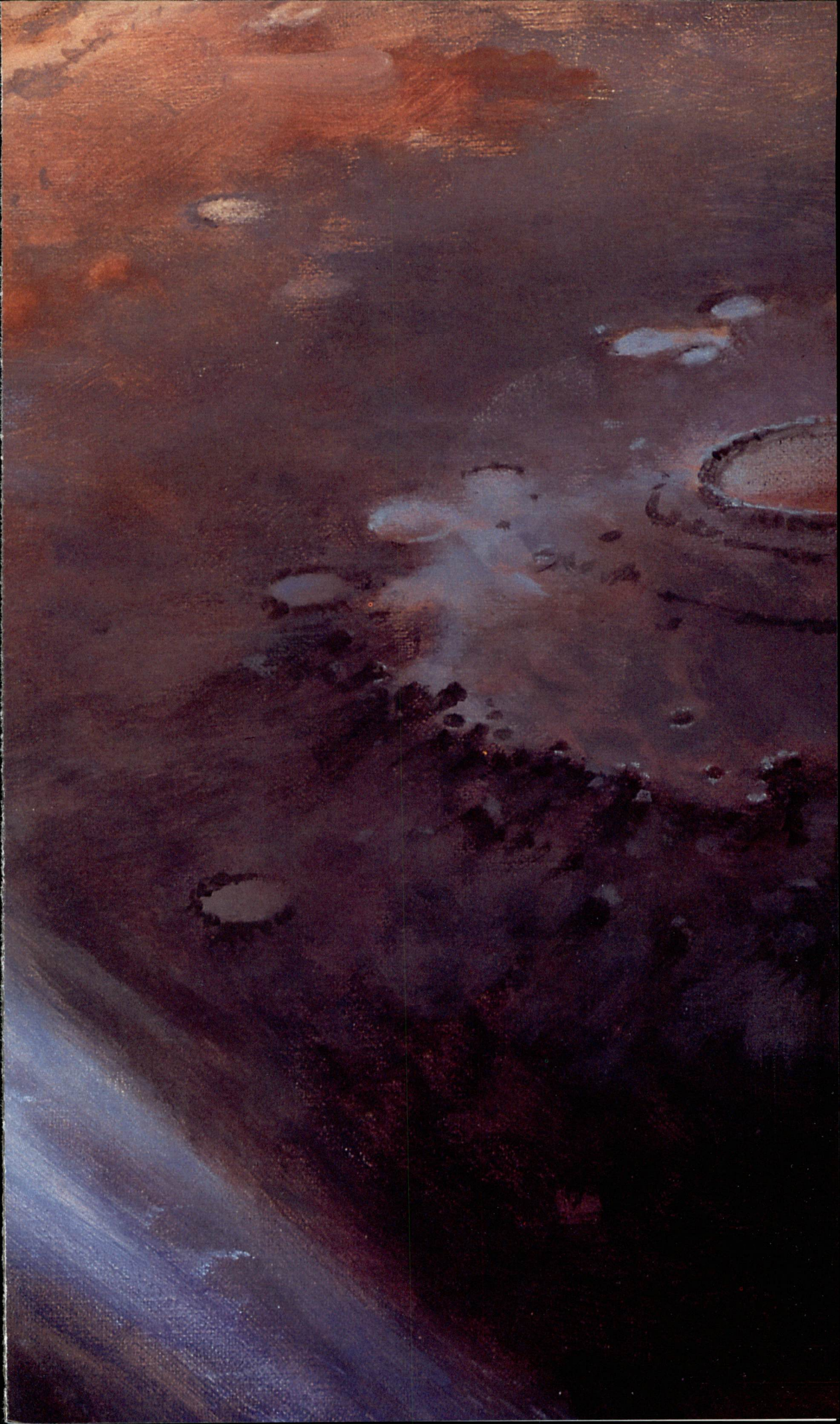
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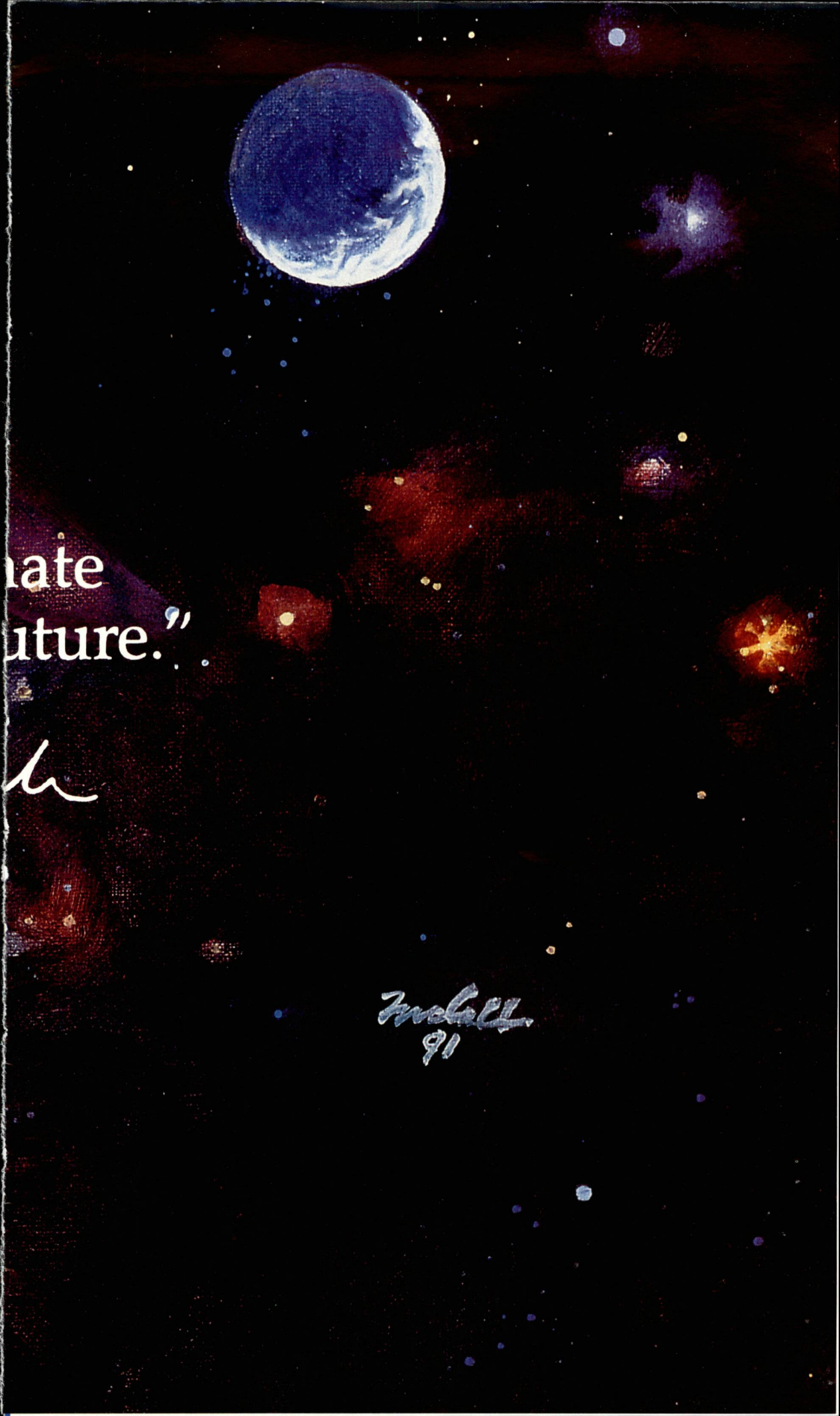








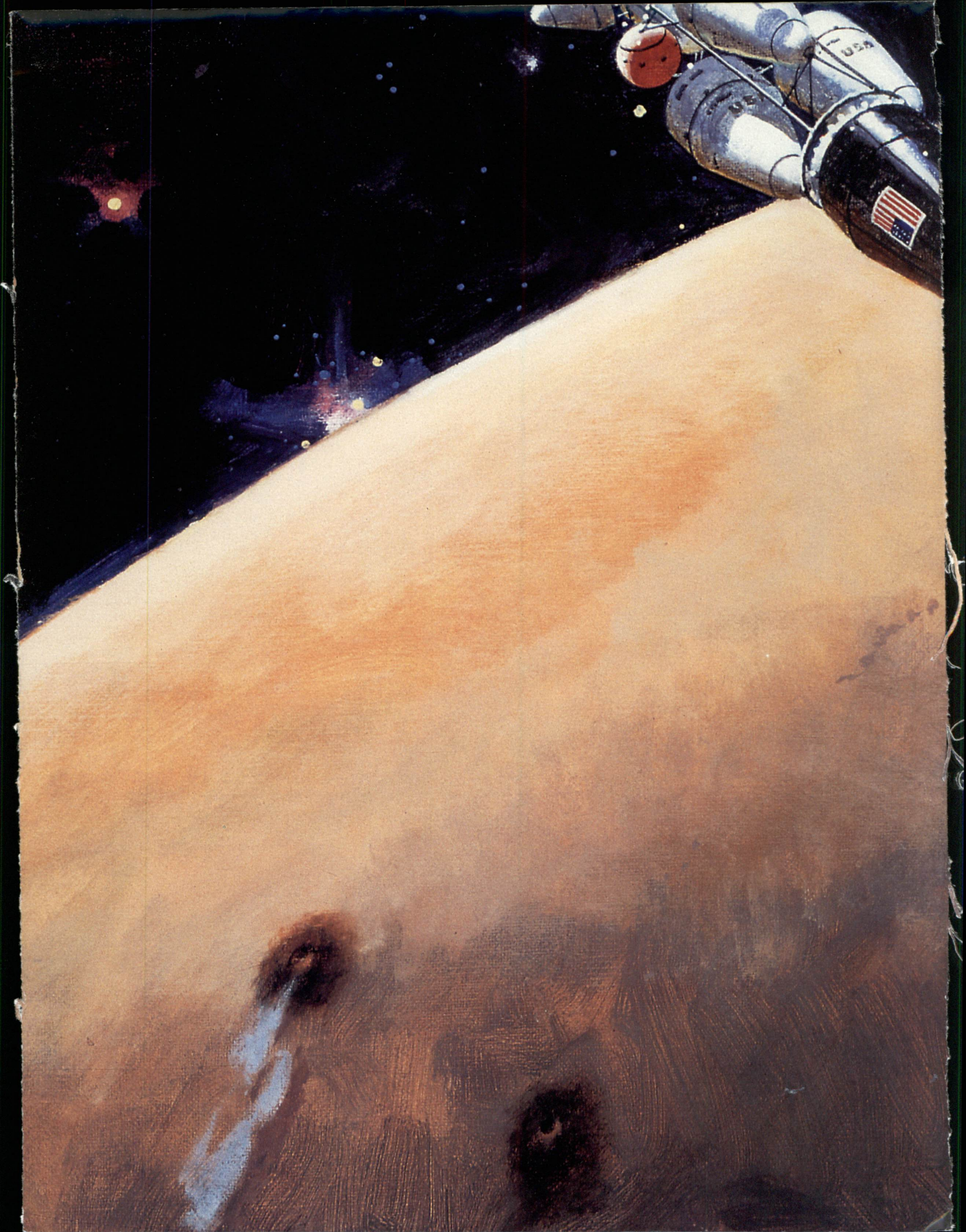


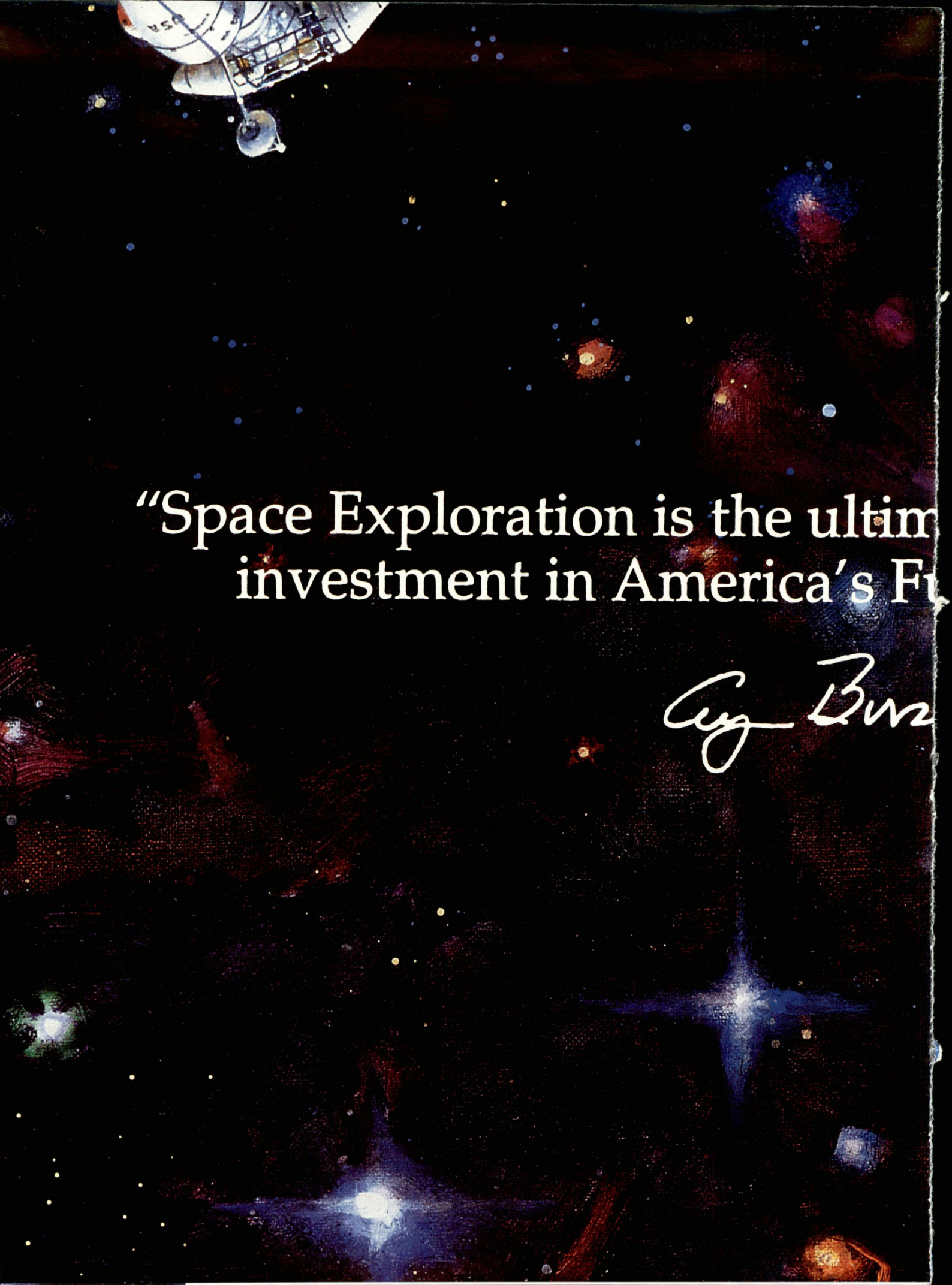


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McCall
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"Space Exploration is the ultimate
investment in America's Future."

Cory Bush



CATALYST

CATALYST: A Concept for an Integrated Computing Environment for Analysis

CATALYST: A Concept for an Integrated Computing Environment for Analysis

This paper was prepared by Diane Q. Webb, Office of Scientific and Weapons Research. Comments and queries are welcome, and may be directed to the Chief, CATALYST Development Staff, on 874-0400 or ~~secure~~ 70423. ⁰³⁵⁷

2 or Dennis McCormick (708) 874-0358

October 1989

Scope Note

This paper builds upon previous thinking within the Intelligence Community about the use of computers in intelligence analysis. It suggests an overall framework in which many different computer tools can be evaluated and compared. The paper discusses the concept of an integrated system of computer tools for assisting the all-source analyst, particularly the analyst who must cope with large amounts of text. Many of the individual ideas presented in this paper have been discussed at length in the Intelligence Community, but we believe that this paper provides a unique framework for the application and integration of these ideas.

The concept described in this paper grew out of the CATALYST (Computer-Aided Tools for Analysis of Science and Technology) project in the Office of Scientific and Weapons Research. The project is aimed at developing tools to assist in the analysis of foreign science and technology in the hope that past successes in computer-aided signals analysis can be repeated in the more complex area of all-source technical analysis. The CATALYST concept has been useful to OSWR in helping to plan and prioritize new investments in computer-based tools. Other members of the Community briefed on the concept have indicated a potentially broader applicability across many analytic organizations. With that expectation, this paper is presented to help stimulate research and focus attention on a wide range of initiatives that developers of computer systems may provide to the analytic community.

Contractor use of the graphics and concepts discussed in this paper is generally encouraged, with the stipulation that attribution be made to the US Government.

CATALYST: A Concept for an Integrated Computing Environment for Analysis

Summary

To meet the intelligence demands of the next century, the Intelligence Community needs to develop powerful tools for extracting more analytic insight from increasing volumes of all-source data. *The CATALYST (Computer-Aided Tools for Analysis of Science and Technology) concept provides a functional specification for the analytic computing environment that we believe will be needed.*

The foundation of the CATALYST concept is the Intelligence Community's longstanding objective of helping analysts identify critical information without having to read through impossibly large amounts of raw data. We propose a set of automated tools managed by the analyst to process both incoming and historical data — sorting, retrieving, comparing, and counting data; performing basic statistical analyses; and looking for trends, anomalies, and missing data — with sufficient built-in knowledge to operate on large amounts of data automatically.

These tools would broaden the information under the analyst's control. They would draw immediate attention to information or patterns of activity that the analyst has specified as having potentially high significance. Such tools are essential to enable analysts to focus their time on interpreting rather than searching for the best available data.

Enhancing overall analyst productivity requires a system of interconnected computer capabilities, so that efficiency gains in one part of the analytic process can be exploited in all other stages of analysis. The analytic computing environment proposed in this paper reflects the wide variety of real analytic activities. *It consists of an integrated set of computer tools needed by the analyst at each step of the analysis process — from the review of computer-highlighted data and hypotheses, and the retrieval and analysis of additional data, to the production of finished intelligence.*

**We propose a set
of automated tools
managed by the
analyst to process
both incoming and
historical data . . .**

The major elements of the CATALYST environment are reflected in the six levels of the computer-assisted analysis pyramid. . .

The major elements of the CATALYST environment are reflected in the six levels of the computer-assisted analysis pyramid (see figure):

- Automatic entry of information into online data bases — integrating text, signal, and image data from diverse sources — and making this data accessible in the computer environment
- Automatic highlighting of potential alerts, anomalies, trends, and complex relationships
- Computer tools to assist the analyst in evaluating data and patterns and in exploring alternative scenarios
- Organization of ideas and supporting data using tools that help the analyst put ideas and data into the framework of a finished analysis product
- Production of textual and multimedia reports and briefings
- Timely and efficient revision and coordination of finished intelligence.

Implementing CATALYST

The successful implementation of the CATALYST concept will require meeting significant challenges in hardware and software development, user interfaces, training, and computer support. The key challenge to implementing CATALYST is the development and integration of a wide range of software for each block of the pyramid. Although significant software development will be required, existing commercial products, if properly integrated and implemented, could fulfill many of the requirements of the analytic computing environment.

The analyst must be able to access and use all elements of the analytic computing environment from a single workstation. The concept of distributed computing is critical to the successful implementation of the analytic computing environment. Careful attention to user interfaces, as well as extensive online training — which suggests to the analyst what to do as well as how to do it — must be integral components of the CATALYST environment.

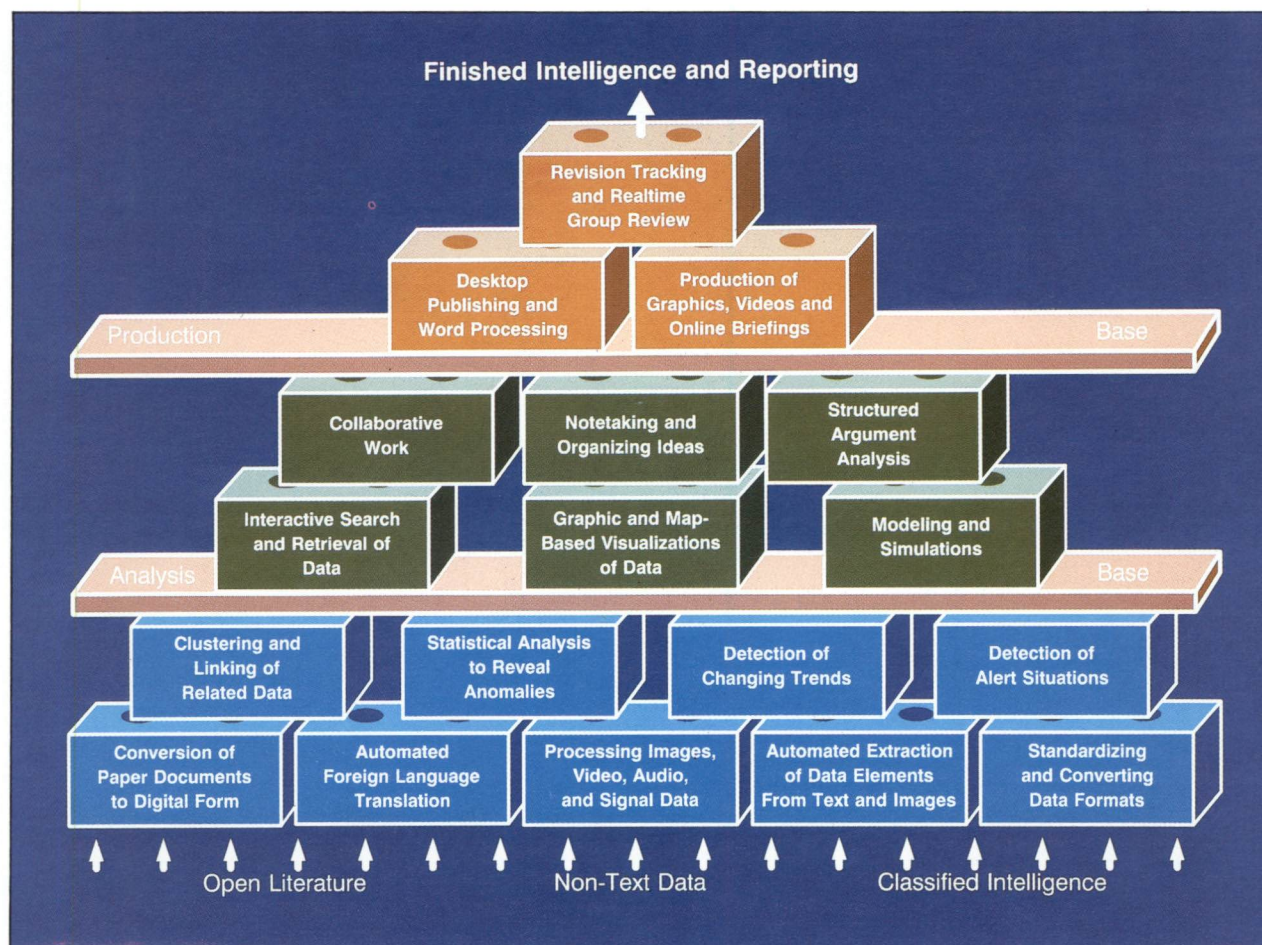


Figure *The Key Blocks of the CATALYST Analytic Computing Environment*

The CATALYST environment can be visualized as a computer-assisted analysis pyramid in which interconnected computer tools are available at every step of the analysis process.

**The
implementation of
an integrated
system of tools. . .
would enable
analysts to base
their assessments on
a far wider range of
data. . .**

Finally, the effective use of powerful analytic tools will depend on a support organization that ensures reliable system performance and assists the analyst in the use and modification of a diverse and constantly changing set of tools.

Benefits of CATALYST to the Intelligence Community

The implementation of an integrated system of tools for computer-aided analysis would enable analysts to base their assessments on a far richer set of data. The ability to monitor massive volumes of all-source data would allow effective tracking of a much greater range of potential threats. *By focusing analysts' efforts on the problems requiring intuition and judgment, the Intelligence Community could use existing analytic resources far more effectively.*

Furthermore, the benefits of an analytic computing environment would go beyond improving the analyst's use of data. An integrated analytic environment would enable production components to task collection systems more efficiently by allowing more of the existing data to be used in defining collection requirements.

The CATALYST environment also would provide an excellent means to preserve institutional memory. Analysis and computer-aided processing could be based not just on what today's analyst has read and can remember but on all the data and analysis contained in the system. New analysts could more easily build on the expertise of their predecessors. *As a result, the Intelligence Community would be able to provide a significantly better product to policymakers.*

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Introduction

Throughout the Intelligence Community, questions are being posed about potential next steps in the application of computers to help solve analytic problems. What do analysts need most from computers? Is there a common vision of what an effective system of computer-based analysis tools might look like? Should the many disparate computer projects in the Intelligence Community share a common underlying strategy, even though they deal with different kinds of analysis?

Some definite ideas about these issues have grown out of the exploration of advanced computer tools in one particular analytic environment, the Office of Scientific and Weapons Research (OSWR). Although these ideas were conceived in the context of scientific and technical analysis, we believe they may be extensible to many other areas of analysis.

The potential of computers to address the needs of analysis has been understood for years. Nevertheless, the Intelligence Community has had difficulty getting the most out of computer technology in the analytic environment. Analysts have been provided with useful word-processing and text-retrieval tools, but the anticipated dramatic gains in analyst capabilities have been elusive. *We believe that the following factors have inhibited the development of effective analytic computing tools to date:*

- *A focus on individual tools aimed at specialized aspects of the analytic process.* Because analysis involves many different kinds of activities in a typical day, the analyst needs a wide-ranging system of interconnected computer tools to be effective. No single tool can substantially enhance overall analyst productivity by

CATALYST Terminology

In writing this paper, we have tried to minimize the use of technical terminology. Rather than using terms such as "software," "word processor," or "data base application," we talk generically of "tools," which are combined hardware and software applications provided by the computer to the analyst.

The use of the word "tool" is deliberately intended to provoke comparison to a hammer or screwdriver. Just as the right screwdriver allows one to remove a screw quickly and efficiently, so we believe that the proper computer tools will greatly improve aspects of the analyst's job.

To describe both the complete set of tools needed by analysts and the operation, support, and training aspects of making these tools effective, we use the word "environment." The analytic computing environment (or the CATALYST environment) therefore describes all aspects of the computer as it relates to improving analysis.

itself. Unless a tool acts as part of a system, much of the value of automation at any one stage of analysis is likely to be lost at adjacent steps in the analysis process.

- *Insufficient or unsuccessful involvement of analysts in the development of computer tools.* It has been hard to find developers and potential users of computer tools who can comprehend each others' capabilities, limitations, goals, and aspirations; yet, effective communication of this sort is essential.

The Problem — Significant Data Often Goes Unseen or Unexploited

The Intelligence Community today faces a serious and widely recognized problem—too few analysts to effectively exploit the massive volumes of data being collected to address an ever-increasing number of intelligence issues. Analysts do not have enough time to read and assimilate each new day's collection, let alone compare the new data to large holdings from prior collection.

The volume of data relevant to wide-ranging issues concerning many nations will certainly continue to expand. *There are simply not enough analysts to constantly monitor the data on each of these potential threats.*

- ***Immature computer hardware and software technology.*** We believe that, until recently, information processing technology has simply not been capable of supporting the development of a system of tools that could be readily exploited by most analysts.

Because of advances in technology and experiences in the Community, we believe that future analytic tool development can be markedly more successful than in the past. From our exploration of computer-based tools for scientific and technical analysis, we have developed a functional specification for a comprehensive analytic computing environment that can be achieved in the near term.

The foundation of this environment is a set of automated tools to operate on enormous sets of new and old data to provide the analyst tipoffs to potentially significant links, trends, and

anomalies. In addition, we have identified a broad set of computer tools likely to be needed by the analyst throughout the analysis process — from retrieval of data to evaluation of computer-generated hypotheses to production of finished intelligence.

The Only Practical Solution — Computer-Based Analytic Tools

In principle, computer tools should be able to do what a limited number of analysts never will — constantly monitor the totality of incoming data and compare it with data received in the past. People have long envisioned systems of tools that would provide the analyst tipoffs to relationships in the data — trends, patterns, correlations, and anomalies — that could indicate important intelligence events. The major benefits of such an analytic environment would be:

- ❖ More effective monitoring of worldwide events using comprehensive, all-source data.
- ❖ Creation of an institutional base enabling the analyst to build on the experience and knowledge of other analysts.
- ❖ Ability to quickly begin assessment of new intelligence events from a base of online, preanalyzed data.
- ❖ Freeing the analyst to spend more time doing analysis — evaluation and prediction of events — rather than routine data management.

The concept described in this paper grew out of the CATALYST (Computer-Aided Tools for Analysis of Science and Technology) project in OSWR, which is aimed at developing tools to assist in the analysis of foreign science and technology (S&T). Although many of the individual concepts and ideas presented in this paper have been discussed at length in the Intelligence Community, we believe that this paper provides a unique framework for the application and integration of computer tools for all-source analysis.

A Plan for the Analytic Computing Environment

The Analytic Process Today

The intelligence process has four major components: collection, processing, analysis, and production. Clearly, computer-based tools can be applied to all aspects of this process. In this paper, we focus on the last three stages of the intelligence process, which require the intelligence analyst to manipulate large amounts of data.⁻¹⁻

Today, the analyst is heavily involved in all three stages. In the processing stage, the analyst finds, reads, sorts, and files all the data that seem to pertain to his areas of responsibility. Having gathered data together, the analyst has already begun the analysis stage — noticing patterns, making hypotheses, and focusing additional collection. From this research, the

analyst organizes his thoughts and supporting data into drafts of finished intelligence, which are typed, reviewed, and revised.

This way of doing analysis has its strengths and weaknesses. Its strongest point is that analysts are intimately familiar with each piece of data on which their analysis is based. The problem is that we are faced with far more incoming data than analysts can assimilate. Because analysts can read only a limited amount per day, their judgments necessarily reflect an increasingly limited sample of the total available data on a given issue. *But what about the collected data that is never read? The analyst must hope that the unread data is consistent with the conclusions reached.*

How can computers help? Computer tools can improve the process whereby analysts choose the raw data on which to focus their attention. Because computers are good at doing rapid and repetitive processing on large volumes of data, modern automated tools could tirelessly process both incoming and historical data — sorting; retrieving; counting; performing basic statistical analyses; looking for trends, anomalies, and missing data — and alert the analyst only to items or patterns of potentially high significance.

The analyst need not personally review or remember each piece of data that might conceivably pertain to his research topic. Instead, he can examine a richer set of data — the information that the computer highlights in response to his instructions, plus additional data that the analyst calls for in the process of investigating the associated hypotheses.

⁻¹⁻ The analyst's involvement begins at the point where raw intelligence is handed off by the collection and processing elements to the analysis components and ends with the delivery of the analyst's coordinated intelligence product to the production

and dissemination components. However, the analyst is continuously involved with all elements of the intelligence process by providing guidance and feedback to collectors and by maintaining close ties with consumers.

The Concept of an Analytic Computing Environment

The CATALYST concept is based on computer tools that operate unattended, looking for relationships and trends in huge amounts of raw, all-source data. As indicated above, this automated approach is essential for analysts to base their conclusions on a much broader and deeper set of data than they could ever read unaided. Automated tools are needed if intelligence consumers are to get the most value out of the raw data collected on any given issue.

The analytic computing environment should not be merely a collection of computer-based tools; rather, it should be a system of interconnected capabilities designed to aid the analysis process. Because the analysis process can be broadly conceived as winnowing large amounts of raw data into a focused finished intelligence product, *we can best understand the CATALYST environment as a computer-assisted analysis pyramid, in which interconnected computer tools are available at every step of the analysis process* (see figure 1).

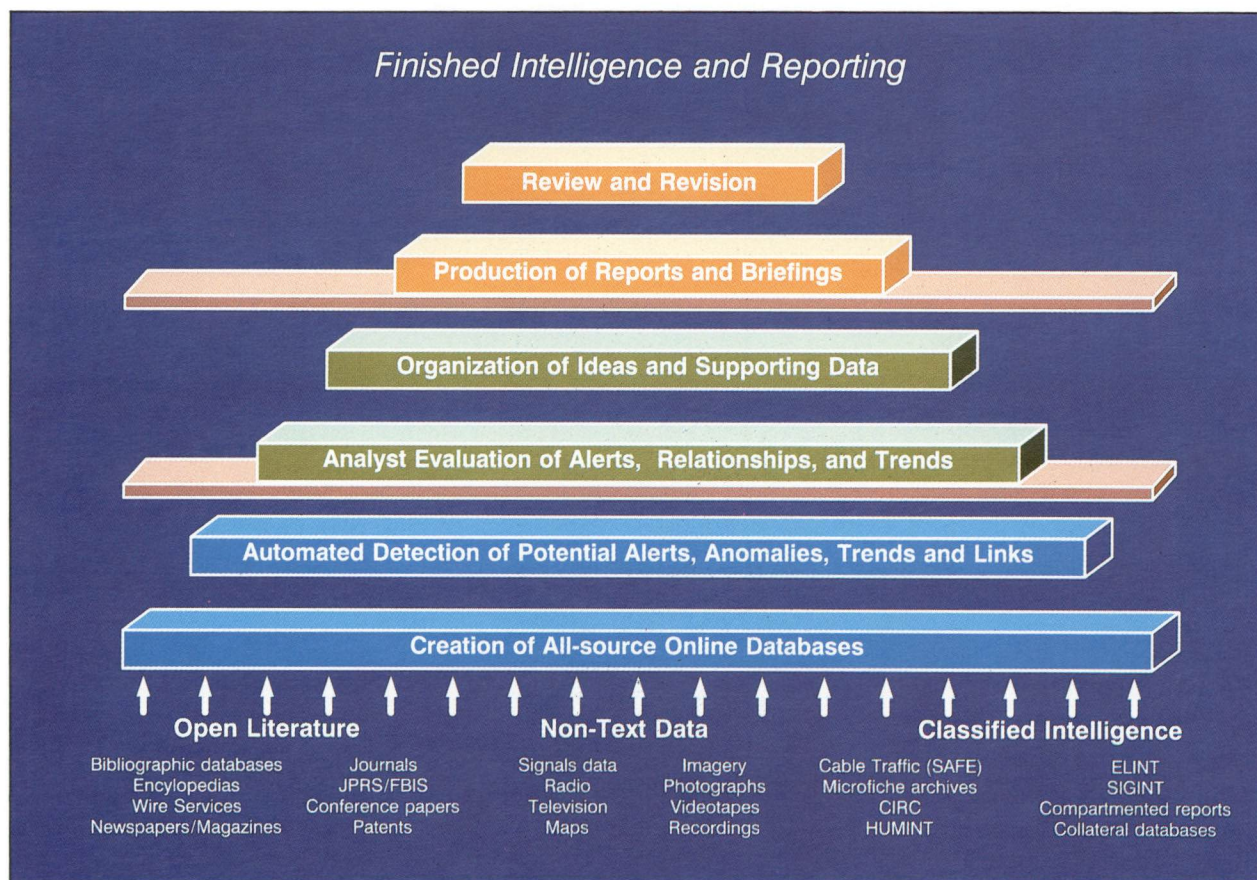


Figure 1 *The Steps in the Computer-Assisted Analysis Pyramid*

Analysts need computer tools at each step in the analysis process, from data processing to analysis to the production of finished intelligence.

Included in the analytic computing environment would be tools for analysts to manipulate data and ideas, evaluate and test hypotheses, identify patterns in the data, and forecast future developments. The analyst must have direct and rapid access to any tool or piece of the data held in the system, including reference data bases, institutional knowledge, models, and simulations. *Our experience indicates that the analyst needs such capabilities throughout the analytic process, from the outset of a research project to the final production of finished intelligence.*

The Steps of the Computer Assisted Analysis Pyramid

The Data Processing Steps

At the bottom of the pyramid, data flows in from a wide range of sources. Regardless of the source of the data, *the first step is to automatically build integrated, all-source, online data bases* on which computer tools can operate. Some of this data is already in electronic form, but much of the data exists only on paper. Clearly, computer tools can operate only on data that exists in the computer environment, so conversion is a key step for successful operation of subsequent tools.

The second step is the automated detection of potential alerts, anomalies, trends, and links. This step is at the heart of the analytic computing environment, as it provides the enhanced selection ability needed to cope with massive volumes of past and present all-source data. This step would consist of collections of computer "agents" (see box) that would search both incoming and historical data for indicators of potentially significant activity, such as a link between two previously unassociated persons or rising/falling activity at one of a thousand facilities. These agents, operating automatically,

would constantly draw on a knowledge base to provide the analyst with tipoffs to potentially important intelligence events.

The first two steps in the pyramid create the analysis base, representing a large volume of data that has been automatically previewed and organized on behalf of the analyst. The analyst at this point has been involved only in guiding data collection and in making critical decisions about the raw data to be fed into the system. The analyst has also played a key role in defining the items and patterns of interest that guide the automated review of new and old data. But thus far, the analyst has not yet seen any of the individual reports.

The Analyst's Agents and Demons

In his recent book *The Society of Mind*, Marvin Minsky, a leading thinker in artificial intelligence, suggests that intelligent minds are made up of many smaller processes, which he calls "agents." Each of these agents carries out simple, nonintelligent functions; it is the sum of the activity of many agents that approaches intelligent behavior.

Minsky also talks of "demons," which are recognition agents that lurk silently in the background, watching for certain conditions and then carrying out predefined actions. We envision the smart tools in the second layer of the pyramid as being composed of such agents and demons — each carrying out simple statistical, rule-based or pattern-matching processes — the sum of which would begin to approximate the data monitoring capability of human analysts.

Will Analysts Accept the Concept of Automated Data Evaluation Tools?

Whether analysts would welcome such a change in approach depends critically on the tools provided at the third level. It seems clear, for example, that analysts will justifiably reject any system that does not provide direct access to the original source data. Analysts will also be concerned that an autonomous computer previewing and organizing the raw intelligence will fail to recognize subtle but significant leads that a human could exploit.

Nevertheless, we believe analysts will conclude that even imperfect tools operating on orders of magnitude more data will yield many more leads for an analyst to pursue. Furthermore, organizing these tipoffs along with all other pertinent information into a well-structured data base will increase the overall chances for analysts to find the more subtle leads. *We expect the analyst's improved control over data to outweigh any concern over imperfect computer processing.*

The Analysis Steps

The analyst thus enters the process on a day-to-day basis at the *third step, the evaluation of the potential alerts, links, trends, and anomalies* that have been identified by the automated detection tools. At this point, the analyst would be presented with computer tipoffs to any developments defined to be of possible interest. To test the validity and significance of these computer-generated hypotheses, the analyst would

have many tools at his disposal, such as interactive retrieval tools, graphical display and analysis capabilities, and modeling and simulation packages. These tools would allow the analyst to view data relationships from different points of view and to quickly find information related to the hypothesis under evaluation.

The fourth step involves the organization of ideas and supporting data. Here, the analyst organizes the results of analysis done in the third step into hypotheses and well-structured arguments, and then organizes these arguments into the outline of a finished intelligence product. At this step, the analyst would have tools to facilitate the organization of notes and data, outlining, and the incorporation of group work.

For the analyst, these two analysis steps represent the core of the analytic computing environment. Using the time previously spent trying to monitor and organize incoming data, the analyst devotes his expertise to the more abstract tasks of interpreting foreign developments, relating them to important intelligence issues, testing alternative hypotheses, and making predictions. The third and fourth steps together result in structured and tested analytic judgments which constitute the intelligence production base. At this point, an intelligence story is ready to be told.

The Production Steps

The fifth step is the production of reports and briefings. The analyst uses simple, flexible, and interactive word processing and graphics tools to present analytic judgments in a draft of finished intelligence. In the *sixth and final step, online interactive review and revision tools* assist the tracking and incorporation of the comments and changes of the multiple parties involved in coordination and production. This

process is a source of great frustration to analysts today. Computer tools have potential for reducing the confusion and uncertainty in the production cycle, thus facilitating the difficult path towards consensus.

The Finished Intelligence Product

The final result is *finished intelligence* available for hard-copy or electronic dissemination. The finished intelligence product could take many forms: the traditional report, slides or viewgraphs for a briefing, videotape, or even a multimedia online presentation. We believe that, in the not-too-distant future, selected consumers will require online access to finished intelligence as a natural consequence of an increasing reliance upon near-real-time intelligence.

An on-line dissemination environment may at times entail the spreading of certain current intelligence responsibilities across shifts of analysts. Enormous importance will be placed on continuity of knowledge and a capability for rapid comparison of new data to previous information and judgments. Clearly, a CATALYST-like system would be essential in an era of electronic intelligence support to consumers.

The production of finished intelligence in an integrated computer environment would open great possibilities for improving consumer access to Community thinking. We could provide not only today's concise judgments, but, at the consumer's touch of a button, a more detailed presentation of the thinking and data underlying that finished intelligence. Eventually, electronic dissemination should facilitate more rapid and effective feedback between the analytic and policymaking communities.

The Building Blocks of the Computer-Assisted Analysis Pyramid

Figure 2 (see next page) illustrates the building blocks of computer tools that would be needed to build an effective analytic computing environment. The specific tools are described in more detail in the Appendix.

We recognize that the analytic environment presented in figure 2, with data flowing in at the bottom and finished intelligence flowing out at the top, is a simplified view of the analysis process. In the real process of analysis, which often entails following many different problems at the same time, the analyst will move back and forth between tools at different levels in the analytic process. For example, while putting the finishing touches on a report, the analyst may need to go back to the raw data, or a new piece of data might suddenly provide the missing element of an hypothesis the analyst was developing in the notetaking process.

The tools that make up the computer-assisted analysis pyramid must support the chaotic reality of analysis, allowing the analyst to jump back and forth between tools to follow up chains of thought as they occur. To support this, the analyst should be able to move data and ideas smoothly from one tool to another. Further, the analyst should be able to retrace his path — or follow the path of another analyst — through the system from the finished intelligence product, to the generation of the analyst's argument, to the computer-generated hypotheses, and finally back to the original data.

To be effective, an analytic computing environment must combine the individual tools at every level of the analysis process into a unified

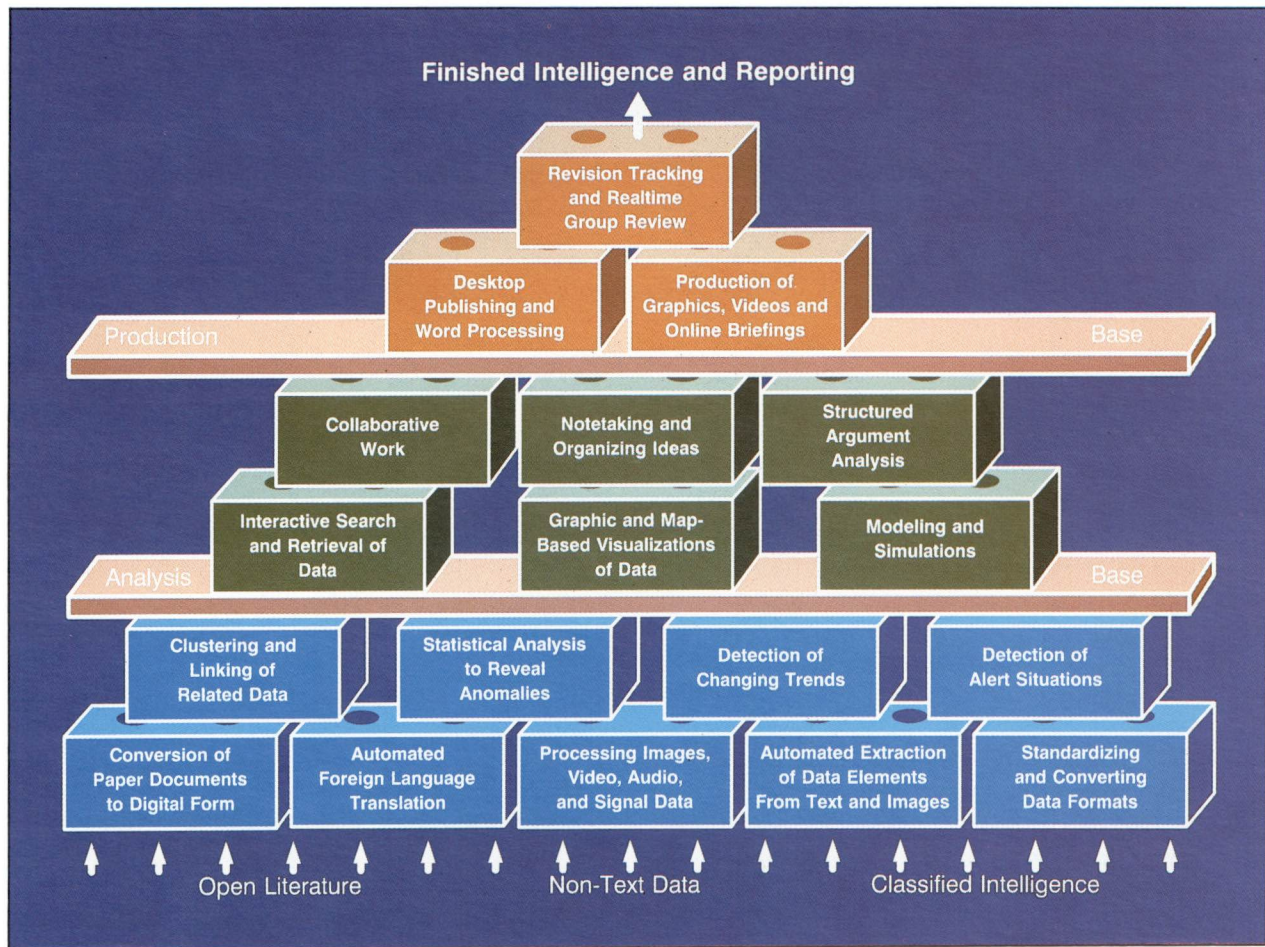


Figure 2 *The Key Blocks of the CATALYST Analytic Computing Environment*

The CATALYST environment can be visualized as a computer-assisted analysis pyramid in which interconnected computer tools are available at every step of the analysis process.

system. This is because the analytic process consists of many varied, interdependent activities. We believe that the lack of a systems approach has contributed to the disappointing results of several past computer efforts — the projects were technically successful but there was no set of surrounding capabilities to make the new tool fully useful to analysts.

For example, disconnected projects that build online data bases contribute to a strong foundation for analysis, but we need to build on this foundation by providing automated tools that guide the analyst to significant pieces of data. Likewise, stand-alone word processors facilitate intelligence drafting, but they lack a strong foundation of data and analysis capabilities. *To make analysts more productive, developers of the analytic computing environment must provide a wide range of computer capabilities.*

Is CATALYST Useful Beyond S&T Analysis?

How extensible is this concept to areas beyond S&T analysis? *Although the CATALYST concept was originally conceived for long-term S&T analysis problems, we suspect it is applicable to virtually all types of analysis.* Clearly, the particular computer tools depicted in figure 2 will differ for different types of analysis; additional capabilities will be required, and some of the tools useful for S&T analysis may not be as useful for other applications.

We believe that all analysts must be able to process incoming information, compare it with what is already known, formulate and test hypotheses, and render judgments in a finished intelligence format. In the case of long-term strategic analysis, this process might take months; in the case of tactical analysis, it might occur in minutes. Indeed, analysts responsible for quick-response analysis would appear to be in even greater need of tools to help them process information rapidly and efficiently.

Keys to Implementing the Analytic Computing Environment

Successful implementation of the CATALYST concept requires new initiatives in computer hardware and software development, user interfaces, training, and computer support. Significant challenges in each of these areas must be seriously addressed if analysts are to be provided an effective analytic computing environment.

The key challenge to implementing CATALYST is the development and integration of a wide range of software for each block of the pyramid. Although significant software development will be required (see box), existing commercial products, if properly integrated and implemented, could fulfill many of the requirements of the analytic computing environment.

Much greater analyst involvement in software development and modification is needed. Although the analytic computing environment will have components shared by large groups of analysts, the exact set of tools useful to any individual analyst will be heavily shaped by his own intelligence assignment. Clearly, an analyst covering Third World agriculture requires some different computer tools than the analyst tracking changes in weapons design would use.

Given a basic set of tools, the analyst should be able to select, design, and customize a complete system of computer-based tools appropriate for his analytic problem. Providing this essential flexibility will certainly require the replacement of today's software interfaces (which are designed for developers) with more straightforward interfaces suitable for the typical analyst.

Requirements for the CATALYST Workstation

One consequence of the need for a system of interconnected tools is that they all must operate from one analyst workstation. Analysts cannot benefit from a rich set of synergistic tools unless they can access them easily and flexibly in a single integrated environment, preferably a single workstation on each analyst's desk. We anticipate that this analyst workstation would have the following characteristics:

- Extremely fast processors and large internal memory.
- Multitasking and multiprocessing.
- Multiwindow graphical user interface.
- Large-screen, high-resolution color and/or grayscale display with the ability to rapidly process multimedia graphics.
- Ability to interface with a variety of computer systems, including mainframes, workstations, and personal computers.
- Ability to add special-purpose processors (for example, signal processing and image manipulation).
- Ultra high bandwidth data communication paths.

Although it is impossible to anticipate the exact requirements of the future analyst workstation, it is clear that current personal computer technology falls short of the demands of the analytic

Selected Technologies Warranting Further R&D

A wide range of computer technologies are needed to construct the six levels of a computer-assisted analysis pyramid. Although many of these technologies have reached at least an early prototype stage of development, considerable improvement appears to be realizable. Technologies that warrant further R&D include the following:

- ❖ Optical character recognition, particularly for typeset text
- ❖ Natural language understanding (for both English and foreign languages)
- ❖ Interactive expert systems and smart data bases
- ❖ Parallel processing, neural networks, and pattern recognition techniques
- ❖ Object-oriented databases and programming languages
- ❖ Hypermedia and hypertext (the storage and manipulation of multimedia data as a network of nodes connected by links)
- ❖ Graphical presentation techniques, including computer simulation, animation, and geographic information systems
- ❖ Automated image recognition, image processing, and 3-D image transformation

computing environment. The computer required to implement the CATALYST concept will probably more closely resemble today's advanced multipurpose engineering workstations.

Distributed Computing

We do not propose that all the complex processing involved in the analytic computing environment take place on the analyst's workstation. The data processing tools represented by the lower layers of the computer-assisted analysis pyramid could clearly operate on supercomputers or massively parallel processors networked to the analyst's workstation. Indeed, we foresee the networking of powerful special-purpose processors, analyst workstations, peripheral storage, and other devices as central to the analytic computing environment. *The concept of distributed computing is critical to the successful implementation of the CATALYST concept.*

Making Tools Easier to Learn and Use — Interfaces and Training

Another key to successfully implementing the CATALYST concept will be careful attention to the user interface. Today, analysts are overwhelmed by a plethora of diverse and difficult-to-use software products. Given the complex range of capabilities we hope to make available to the analyst, it will be critical that all tools be straightforward and easy to use. Adopting a visual and user-friendly interface that is consistent from one tool to another is essential to allow the analyst to focus on using the computer-based tools rather than on learning them.

A more difficult task will be to guide analysts to tools and techniques with which they are not familiar. *Online training* — which suggests to the analyst what to do as well as how to do it —

should be an integral component of the analytic computing environment. One approach is to gradually introduce new tools to the analyst so that expertise is acquired in a logical and phased sequence.

We envision a system that would remember successful strategies used by analysts and suggest additional tools and techniques the analyst might explore. Or, if an analyst failed to apply certain tools, or used them inefficiently, the system might offer an online tutorial or refer the analyst to colleagues who are already using those tools well.

Supporting the CATALYST Environment

The complexity and scope of the analytic computing environment will also require a new approach to computer support. The effective use of powerful analytic tools will depend on a support organization that ensures the reliable performance of the analytic computing environment and assists the analyst in the use and modification of a diverse and constantly changing set of tools.

Computer support personnel will need to work closely with analysts so that the unique requirements of each organization can be understood and met. *The diversity of tools required for analysts covering different intelligence problems and the need for distributed computing resources will compel a distributed approach to computer support as well.*

Potential Benefits to the Intelligence Community

The implementation of a complete set of tools for computer-aided analysis would enable analysts to base their assessments on a far wider

range of data. Such analysis would more closely approach the oft-mentioned goal of all-source analysis, enabling intelligence analysts to base their conclusions on a more complete set of data from both classified and open sources.

The ability to monitor massive volumes of all-source data would allow the Intelligence Community to effectively track a much greater range

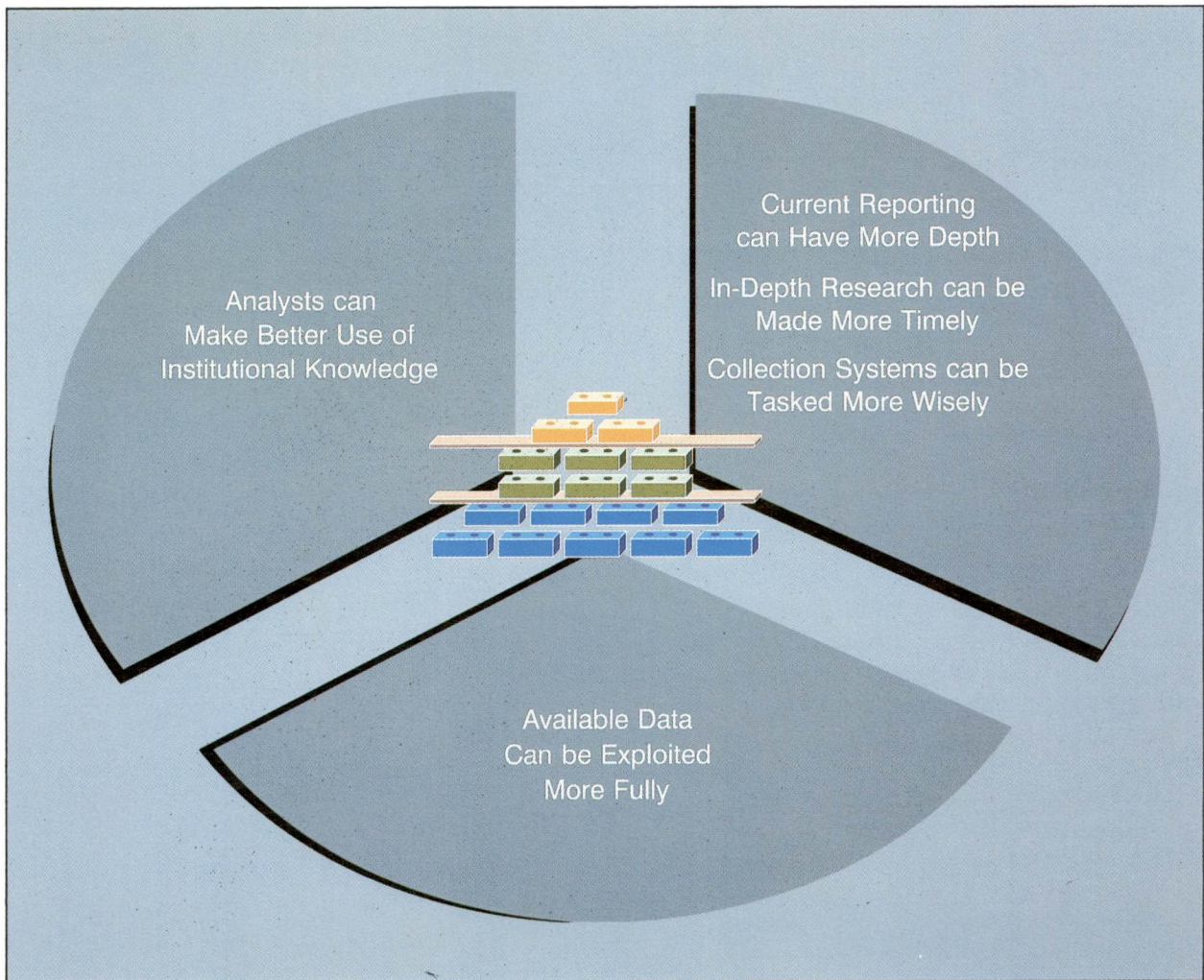


Figure 3 *Benefits of a Modern Analytic Computing Environment*

By covering a wider range of potential threats more thoroughly, the Intelligence Community would be able to provide policymakers with a significantly better product in terms of both quantity and quality.

of potential threats. By focusing analysts' efforts on the problems requiring intuition and judgment, the Intelligence Community could task existing analytic resources far more effectively.

The benefits of an analytic computing environment would go beyond improving analysts' use of data (see figure 3). In particular, an integrated analytic computing environment would enable analytic components to more efficiently guide future data collection. With data from many sources being used more effectively, analysts could focus their tasking more precisely.

In addition, the analytic computing environment could be exploited to determine how data was actually being used by the analysts. Demonstrably valuable data sources could be thus targeted for increased exploitation. Identifying poorly utilized data sources could also lead to improved exploitation or perhaps to a determination that particular data sources have limited intelligence value. *The net result would be a better coupling between collection and analysis, and a better allocation of scarce collection resources.*

The CATALYST environment would also provide an excellent means to preserve institutional memory. Analysis and computer-aided processing could be based not just on what the analyst has read and can remember but on all the data and analysis contained in the system. Not only could raw data be stored where analysts could rapidly access it, but a record of analytic judgments and supporting evidence would be available to successive generations of analysts. New analysts could more easily build on the expertise of their predecessors rather than having to laboriously rebuild data collections and personal knowledge.

The benefits of the CATALYST approach, already needed in today's analytic environment, will become even more important as the Intelligence Community evolves toward providing real-time intelligence to key consumers on line. . .

The CATALYST Program

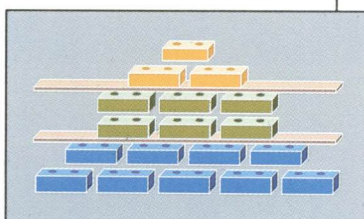
The Office of Scientific and Weapons Research (OSWR), in cooperation with the Office of Information Resources (OIR) and the Office of Research and Development (ORD), is working to develop key elements of the CATALYST environment. Some projects currently underway include:

- ❖ Pinnacle — Digital conversion of paper documents and full text search and retrieval (OSWR)
- ❖ ATLAS — All Source Trends and Linkages Analysis System (OSWR)
- ❖ ALERT — Extraction of data elements from text, natural language processing (OIR)
- ❖ CATALYST Hypermedia — Notetaking and organization of ideas (ORD)
- ❖ BEACON — clustering of related data items using co-citation analysis (OSWR)

Appendix

Some of the Computer Tools Needed To Implement CATALYST

This appendix is intended to provide illustrative examples of some of the key capabilities required for the implementation of the CATALYST system. Each of the sections below corresponds to a block in the CATALYST pyramid (see figure 2). This discussion is not intended to definitively describe all analysts' requirements or the technical approaches best suited to meeting those requirements. Rather it is intended to stimulate thinking and discussion among both analysts and information planners.



Building Online Databases

Conversion of Paper Documents to Digital Form

The conversion of nonelectronic information — both incoming and historical files — into digital form is clearly one of the major components of the computer-assisted analysis pyramid. We have identified two major types of conversion requirements:

- The conversion of massive historical files (such as 20 years of key technical publications)
- The day-to-day conversion of small amounts of information that the analyst finds important to his assigned tasks. The first type of conversion should obviously be done with analysts' encouragement but not actual involvement. For the second type, however, the analyst needs a mechanism for getting important information into the computer environment quickly (in hours, not days).

Existing technology to address this problem includes optical character readers (OCRs), such as those developed by the DEST, Kurzweil, and Calera corporations. These scanners convert printed and sometimes even handwritten text into digital representations. However, the existing technology has several major limitations, including inability to scan foreign character sets, difficulty in dealing with equations and figures, and the need for significant amounts of human quality control following the recognition

process. At present, the high cost and low throughput of OCRs makes scanning large volumes of text prohibitive. There is a critical need for faster, more accurate OCRs, as well as for automated context analyzers that correct some of the OCR errors.

Automated Foreign Language Translation

Merely getting data into the electronic environment is not sufficient; it must be present in a useful form. Much of the information relevant to intelligence issues exists only in foreign languages, and the analytic computing environment must incorporate strategies for dealing with such material. The Intelligence Community has undertaken several efforts to develop automated foreign language translation capabilities, which produce either rough "gisting" of documents or more polished translations. Clearly, the Intelligence Community should continue to strongly support efforts to translate documents from one language to another.

An important parallel requirement is to develop or modify expert systems and statistical tools to operate on foreign language material as easily as on English. Such tools could select the documents of maximal importance to the analyst and automatically translate only the documents that the analyst chooses to read.

Processing Images, Video, Audio, and Signals Data

Nontextual information — including imagery, photographs, line drawings and diagrams, audio sources, television, and videotapes — is an important source of intelligence information. The challenge is to integrate this information with textual sources so that the analyst can make effective use of both. Existing technology allows the relatively easy digitizing of images, which can be linked to text through hypermedia approaches. Increasingly, computer workstations are providing the ability to deal with high-resolution color and grayscale graphical images, as well as incorporating digitized sound and live video capabilities. A major problem today, however, is meeting the massive data storage and high-bandwidth communications requirements of these very information intensive data sources.

Automated Extraction of Data Elements from Text and Images

Another key step in getting data into a useful format is to automatically recognize and extract potentially important data elements from full text and images. Data embedded in superfluous prose

(text) or surrounding scenery (images) is rarely useful; it must be put into a standard format so that it can be compared and contrasted with other structured data. In the case of text, this requires the ability to recognize data elements such as the names of people, facilities, programs, pieces of equipment, and weapons systems along with the context in which they appear in a document. The data elements can then be stored in a structured form (such as a relational data base). This step is an automated version of the labor-intensive manual data entry procedures in use today.

The automated extraction of data from images and text requires significant advances in the fields of natural language understanding and automated image recognition (two subfields of artificial intelligence). In addition to the traditional artificial intelligence techniques being explored today, new technology in parallel processing and neural nets may be applicable to these problems. A further requirement will be the construction of end-user interfaces, which allow the analyst to instruct and modify the automated extraction process.

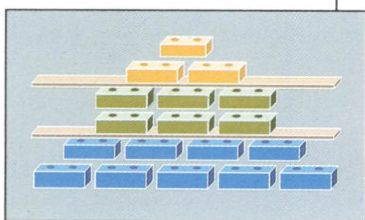
Standardizing and Converting Data Formats

Although the Intelligence Community should continue to encourage the adoption of standard formats for storing all sorts of data, many data sources will continue to be created outside of the Intelligence Community. For the foreseeable future, important data will exist in many incompatible electronic formats. To effectively use data from many different sources, the Intelligence Community will need to develop a capability to rapidly convert data from one format into another.

Automated Detection of Potential Alerts, Anomalies, Trends, and Links

Clustering and Linking of Related Data

One key to identifying significant data relationships is grouping together, or clustering, related pieces of data. This might involve identifying all items dealing with a particular scientific research topic or those about a certain country. Once data clusters have been identified, the computer can alert the analyst to clusters with unusual characteristics or to data that do not fit into standard clusters.



Several techniques have been developed for clustering full-text information, including co-citation and co-author clustering, co-term analysis, N-grams, and more traditional statistical clustering methods. Given the massive amounts of data that intelligence problems often involve, it is particularly important to develop techniques for rapidly clustering very large volumes of data.

Statistical Analysis To Reveal Anomalies

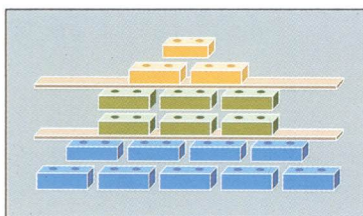
Given the extraction of structured data items (such as names, places, and project names), traditional statistical analysis techniques can be powerfully applied to revealing unusual patterns in the data. Data elements that do not fit preexisting data patterns may indicate phenomena of interest to the analyst. For example, the sudden appearance of research activity at a previously unknown facility may indicate the appearance of a new research program.

Detection of Changing Trends

Statistical techniques can also be applied to spotting unusual trends in data. By watching rising and falling levels of activity in a particular area, for example, the analyst could detect changing priorities and shifts of emphasis. These statistical techniques could range from simple counting methods to more sophisticated statistical analyses. As with other tools in this level, the most effective tools will be those that provide interfaces allowing the analyst to easily modify the statistical analyses and how they are presented to the analysts.

Detection of Alert Situations

The detection of events of interest to the analyst provides an excellent application for rule-based expert systems. Ideally, these expert systems would be easily modifiable by analysts so that they could interactively instruct the expert systems to look for specific events, or combinations of events, in the data. These expert systems could operate on top of powerful relational data bases, which would be populated by the tools needed to build online data bases.



Analyst Evaluation of Alerts, Relationships, and Trends

Interactive Search and Retrieval of Related Data

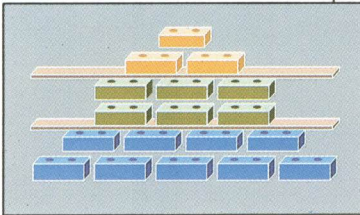
It is essential that the analyst be able to access any data in the CATALYST system (including raw data) rapidly and easily. This requirement can be addressed with today's state-of-art tools for full-text and structured data base search and retrieval. The key requirements for such interactive retrieval systems are rapid response against very large data bases and retrieval techniques that are transparent to the analyst. Existing technology to search full-text data bases includes preindexed text search (implemented in SAFE and the OSWR Pinnacle system) and hardware-based pattern matching systems such as the Fast Data Finder. Natural language interfaces that allow the analyst to query data bases with simple English sentences and icon-based or graphical query systems have great potential to facilitate rapid and interactive analyst retrievals.

Graphic and Map-Based Visualizations of Data

Pictorial or graphical representations of data often have more meaning to humans than do the same data presented in traditional text or tabular forms. Such graphical representations of trends or relationships can help the analyst to recognize subtle patterns in data. Geographic displays are particularly useful for many intelligence applications because the analyst is often interested in following activity in a particular country or region. Effective use of geographic displays requires sophisticated geographic information systems that are based on either digital or analog maps. Graphical displays also provide an effective user interface, allowing the analyst to move between different levels of detail in data structures.

Modeling and Simulations

Particular aspects of the analysis process lend themselves well to modeling and simulation techniques. Models and simulations allow the analyst to determine the significance and impact of new data to their understanding of an intelligence problem, as well as providing ways to test "what if" scenarios. If the analyst can define a fairly well-behaved structure or process (for example, the predicted performance of a weapons system), new and historical data — even hypothetical data — can be plugged into the model to assess their implications.



The need for modeling and simulation constitutes another obvious requirement for artificial intelligence and expert systems. Although the Intelligence Community has been developing related technologies for years, models and simulations would clearly be even more effective if embedded in a system of tools and data as represented by the CATALYST concept.

Organization of Ideas and Supporting Data

Notetaking and Organization of Ideas

One of the most needed elements of the analytic computing environment is a tool that allows the analyst to capture and organize ideas and supporting data. One look at the existing paper files, boxes of index cards, and notebooks that analysts keep today reveals both the need and the enormous potential for a flexible analyst notetaking environment.

We believe that this notetaking requirement is closely met by the "hypertext/hypermedia" concept (the storage and retrieval of multimedia data with complex data relationships and connections), which has recently become popular in the computer community. Xerox's NoteCards and Apple's Hypercard are examples of existing hypermedia products.

A hypermedia system could allow the analyst to create and modify a complex network of data and hypotheses and the relationships between them. The analyst could store ideas and the data relating to them in packages that could be organized at any time into the more structured arguments that would underlie a finished intelligence product. Furthermore, the analyst could build alternative scenarios, or frameworks, and could reject or accept them as future information suggested. Such a tool might also allow a more focused communication of ideas among analysts and managers concerning the status and substance of proposed research papers.

The requirements for a notetaking environment are:

- The analyst must be able to quickly and easily incorporate information in the system into analyst notes.
- The notetaker must provide traceable links back to original source documents.
- The analyst must be able to quickly visualize the structure of the network of notes and reorganize it if necessary.

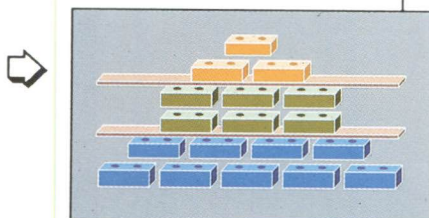
- The notetaking environment must be closely integrated with the finished intelligence production tools at the next level of the CATALYST pyramid.

Collaborative Work

An analyst's ideas and related data should be embedded in an environment where this information can be easily shared with other analysts. Many intelligence applications require that analysts work together, with each analyst contributing some piece of the solution or with several analysts providing different points of view. At present, much time is wasted in meetings, mailing drafts back and forth, and otherwise transmitting information that then must be incorporated into each person's work file. Providing capabilities for groups of analysts to work with a shared set of data and ideas, with each person's contribution clearly visible, would greatly assist collaborative work efforts.

Structured Argument Analysis

Because the analyst is ultimately responsible for constructing a logical and supportable argument, analysis could benefit from tools that apply formal logic and reasoning techniques to the arguments the analyst has constructed. Such techniques could clarify the reasoning the analyst has used to reach a conclusion; point out where the analyst lacked supporting data, or perhaps had found contradictory data; and enable the analyst to rapidly explore the impact of new data on analytic conclusions or test alternative scenarios. Research is already under way at the Xerox Palo Alto Research Center to apply formal reasoning techniques in the NoteCards environment.



Production of Reports and Briefings

Desktop Publishing and Word Processing

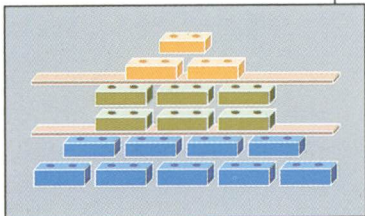
The Intelligence Community has, like many other computer users, recognized the value of word processing and desktop publishing tools in the creation of high-quality finished intelligence products. Prior to the availability of these tools, analysts had to write drafts that were then typed by a secretary. Changes were difficult to make, as they typically required retyping the entire draft. By contrast, a flexible and easy-to-use word processing system allows the analyst to quickly create draft reports and easily modify these

drafts, giving the analyst more control over the creation of his finished intelligence product. Desktop publishing tools provide the additional capability (when appropriate) of rapidly producing high-quality finished products. Advanced desktop publishing packages allow the analyst to use attractive layout techniques to mix text and graphics to communicate his message to the reader.

Although a variety of desktop publishing tools are already in use, we believe these tools would prove even more useful when embedded in a fuller set of capabilities in the computer-assisted analysis pyramid. For example, rather than creating merely a document, the finished intelligence product could retain links to all the ideas and data that supported it. Such finished intelligence packages would be far more valuable (particularly to successive analysts) than the disembodied intelligence reports produced today.

Production of Graphics, Videos, and Online Briefings

In addition to finished intelligence reports, the analyst frequently presents analytic judgments in the form of multimedia briefings. Tools are badly needed that would enable the analyst to quickly produce colorful, informative briefing aids showing the results of analysis. Such tools would include flexible and powerful graphics editors and the ability to send system displays to high-quality printers, film recorders, and videotape. In addition, the system should include a capability to create computer-based briefings that could be disseminated and displayed on line.



Review and Revision

Revision Tracking and Real-Time Group Review

The coordination and revision of finished intelligence is one of the key aspects of the analysis process and one badly in need of assistance. We envision tools that would allow the analyst to track and incorporate the comments and suggested revisions of many reviewers quickly and flexibly. These tools could allow several reviewers to simultaneously edit a single document rather than relying on the time-consuming, back-and-forth process used today. The analyst could instruct the system to incorporate a reviewer's suggested changes, review the impact of the changes, and reverse them if necessary. Revised documents would clearly indicate the source of

revisions and retain the editing history of the document. A reviewer could tag particular suggested revisions as critical, so that both he and the analyst would have to deal with the specified issue before the document could proceed through the process. These revision and review tools, although certainly not eliminating the friction of the coordination process, could certainly streamline it and relieve the analyst of much of the tedious burden of revision.

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01a. Report	Foreign Broadcast Information Service (4 pp.)		(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Publications
Subseries: Miscellaneous Files
WHORM Cat.:
File Location: Articles and Pamphlets [1 of 2]

Date Closed: 6/4/2010	OA/ID Number: 62112-001
FOIA/SYS Case #: 2005-0336-F	Appeal Case #:
Re-review Case #:	Appeal Disposition:
P-2/P-5 Review Case #:	Disposition Date:
AR Case #:	MR Case #:
AR Disposition:	MR Disposition:
AR Disposition Date:	MR Disposition Date:

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
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(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information



WASHINGTON

MEDIA VERITÉ

The inside story on the whole world

EVERY SECULAR priesthood has special sources for the aura of intimidating expertise with which its anointed surround themselves. Doctors and lawyers have their professional journals. Wall Street speculators have the Dow Jones wire and, increasingly, one another. Network newsmen have *The New York Times*.

Those whose job it is to ply the trade of statecraft, or to comment upon those who ply it, are no exception to the rule. And among the sources on which they rely most heavily are the eight *Daily Reports*—one each for the Soviet Union, Eastern Europe, Western Europe, China, East Asia, Latin America, the Near East and South Asia, and SubSaharan Africa—published Monday through Friday by the Foreign Broadcast Information Service. Each *Daily Report* consists of dozens of items of local news and commentary gleaned from radio and television newscasts, news-agency transmissions, and newspapers and periodicals. These items, translated into

English from any of over eighty languages, are reprinted verbatim in the *Daily Reports*. The Foreign Broadcast Information Service (or FBIS, pronounced *fit-bis*) was created in 1941 and is today part of the Central Intelligence Agency. Members of the public may subscribe to any single *Daily Report* for \$290 a year, and to additional volumes for \$90 a year each.

All are good for an occasional laugh—especially the Near East and South Asia edition, which covers Libya and Iran—but the *Daily Report*, one must remember, is a serious piece of work. The many thousands of pages produced by FBIS every year include such apparent dross as the vote totals of candidates competing for city-council seats in Belize (courtesy of *The Belize Sunday Times*) and a complete transcript of the latest speech by the Mozambican Finance Minister to his country's People's Assembly (monitored on the official Maputo Domestic Service). Diligent FBIS readers quickly become familiar with the subtleties of intra-Cabinet infighting in South Yemen (reported in the Kuwaiti daily *Rai Al-Aam*) and of Ovimbundu tribal politics in Angola (as noted by the official South African Press Agency or on Umtata Capital Radio, a private station in the nominally independent Transkei black homeland). They are privy to Fidel Castro's latest thinking on video-cassette recorders ("Video machines are more convenient if the movie ends at one or two in the morning," but, on the other hand, "I'd rather watch good movies on a big screen"). They hardly need to be told that the Iraqi Armed Forces General Command has issued nearly 3,000 daily official communiqués since the Persian Gulf War broke out, in 1980—the *Daily Report* has published almost all of them.

Busy policy analysts in and out of government find it much more manageable to skim these pre-selected morsels of intercepted verbiage than to plow through hundreds of foreign publications for the esoterica needed to dazzle their colleagues at inter-agency meetings, or the public in TV interviews. I, too, read the *Daily Reports*, but my reasons for doing so are somewhat different. Have you ever driven through an unfamiliar part of the country and found yourself—at first impatiently, then expectantly, and finally with a short-lived but serial sense of satisfaction, understanding, and surrender—spinning the dial from station to station on the car radio, absorbing a few

seconds of this and that, the local tones, the local issues, the local ways of seeing things and letting them be seen? Have you ever felt that you have, in this way, acquired nothing less than profound insight into places at which you have never stopped and to which you will never return? To me, reading the *Daily Reports* is like spinning the dial on a car radio that picks up the entire world.

It is a world of disjointed fragments. Libya: The weekly *Al-Zahif Al-Akhdar* asserts, "The Libyan Arabs have the right, if necessary, to trigger World War III to exact revenge on those planning our destruction." Zaire: The female governor of the capital is suspended "for reasons of state" shortly after closing more than half the city's brothels. Iran: For the first time a water heater "specifically for the war fronts" is being made available to mountainous combat zones, "where bathing facilities for the combatants are difficult to set up." Argentina: "The desecrators of President Juan Domingo Peron's tomb have demanded \$8 million for the return of Peron's hands, warning that if the request is not met the hands will be destroyed and pulverized." Nigeria: The minister of external affairs calls on Nigerian scientists to "develop a bomb to end the racial monopoly of nuclear weapons." Burkina Faso: The government's entire press staff is suspended, in part because they "did not see the necessity of acquiring radio sets." Cuba: Marchers protesting U.S. reconnaissance flights over the island carry placards warning, "Reagan, you gunslinger, watch your rear end!"

FBIS's daily output is *media verité*, the raw stuff of world affairs before it is molded into soothingly coherent patterns by pundits and reporters. And for the makers of foreign policy, who frequently exalt abstraction and "conceptualizing," it is a sorely needed reminder of the concrete and the particular. Whenever I hear of ambitions to build "structures of peace" or a "world order"; whenever I hear that growing interdependence will soon have us all within the confines of a global village; whenever I hear that the solution to America's foreign-policy problems is more multilateral policy coordination and an increased respect for international law, I spin the dial, I reach for a *Daily Report*, and I am restored to a state of healthy disillusionment, somehow thankful for the reminder that the world is not in fact quite sane.

—Alan Tonelson

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01b. Report	FBIS Groups (10 pp.)		(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Publications
Subseries: Miscellaneous Files
WHORM Cat.:
File Location: Articles and Pamphlets [1 of 2]

Date Closed: 6/4/2010	OA/ID Number: 62112-001
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Foreign
Broadcast
Information
Service

EUROPE

Economic Review



In This Issue...

EASTERN EUROPE

Highlights of Economic Reforms, Policies, and Performance in:

✓ ALBANIA
✓ BULGARIA
✓ CZECHOSLOVAKIA

✓ HUNGARY
✓ POLAND
✓ ROMANIA

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Europe Economic Review is a new subseries of FOREIGN PRESS SURVEY published by the Europe Division of Production Group with contributions from FBIS overseas bureaus. **Europe Economic Review** is intended to supplement coverage of European economic issues by the FBIS Daily Report for West and East Europe, the JPRS East Europe Report, and other FBIS publications. Foreign news, feature, and editorial reports selected for summary in this publication normally do not appear as full-text translations in other FBIS publications.

Europe Economic Review consolidates and replaces the formerly separate "Economic Issues" subseries for Germany, Eastern Europe, and Western Europe published by this office. The contents of **Europe Economic Review** will continue to consist of abstracts of foreign media coverage of European economic developments under two main geographic headings:

--Western Europe: Drawing on West European, Canadian, and Turkish media, this section will report on national and regional economic issues, focusing on economic competitiveness, key industries, regional economic integration, internal economic policies and performance, and foreign trade and investment.

--Eastern Europe: Citing East European and, where appropriate, other foreign media sources, this section will highlight East European efforts to rebuild national economies and achieve integration into the European Community and the global economy, focusing on policy debates and practical action geared toward the implementation of internal economic reforms and industrial restructuring and on developments in foreign trade, cooperation, and investment from national and regional perspectives.

Under these two main headings, summaries of foreign media reports on all categories of economic issues generally will be grouped under subheadings by subject country or region.

FOREIGN PRESS SURVEY is a U.S. Government publication. Its contents in no way represent the policies, views, or attitudes of the U.S. Government.

FOREIGN PRESS SURVEY

Europe Economic Review

11 March 1992

Vol I, No 7

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ALBANIA

WIDESPREAD UNEMPLOYMENT IN

KUKES: There is "no work in virtually any enterprises" in Kukës District because of raw materials shortages and "lack of interest and responsibility" on the part of managers. More than 4,000 laid-off workers are being maintained on 80-percent pay. (Tirana Radio Tirana Network in Albanian 1830 GMT 23 Feb 92 AU)

RETAIL PRIVATIZATION CONTINUES:

The Berat and Korce district privatization agencies have reported the total privatization of retail stores in their respective districts. Four hundred private cars have been registered in Gjirokastër District, and "almost all motor road transport" is provided by private bus companies. (Tirana ATA in English 0924 GMT 23 Feb 92)

LAND DISTRIBUTION CONTINUES IN

BERAT: 30,000 out of 35,000 hectares of agricultural land have been distributed to peasants in Berat District. A total of 5,500 hectares have been planted with wheat, and preparations are under way for the spring sowing in villages where land has only lately been distributed. (Tirana ATA in English 1020 GMT 23 Feb 92)

DURRES CIGARETTE FACTORY

RESUMES WORK: The Durres Tobacco and Cigarette Factory has resumed work after a 50-day stoppage due to a lack of paper. The factory is working at full capacity, and a new brand of cigarettes for export is being produced. (Tirana Radio

Tirana Network in Albanian 1830 GMT 27 Feb 92)

BULGARIA

NATIONAL BANK AUCTIONS TREASURY

BONDS: On 17 February the Bulgarian National Bank held a second auction of treasury bonds with a nominal value of 600 million leva, repayable in three months. The bonds were offered at a maximum discount of 12.5 percent of the nominal value, and 13 financial institutions took part in the auction, taking up the entire issue. The actual prices paid for the securities remain a banking secret. (Sofia 24 CHASA in Bulgarian 18 Feb 92 p 8)

650 ENTERPRISES POSE

ENVIRONMENTAL THREAT: According to the standing Commission on Protecting the Population in the Event of Natural Disasters and Accidents, some 650 enterprises present potential nuclear, chemical, radiation, seismic, or other risks. In Varna Oblast alone, 113 enterprises pose a potential chemical hazard. The commission has just received the results of a survey of industrial risks to the environment from its scientific council and will later submit its own report to the government. (Sofia DUMA in Bulgarian 20 Feb 92 p 1)

PLOVDIV PLANT STOPS LEAD

PRODUCTION: Under a government decision adopted on 20 February, the Nonferrous Metals Combine near Plovdiv is to cease producing lead and concentrate entirely on zinc production. The 600 workers in

the lead division will be employed on plant reconstruction. The German Lurgi Company has been asked to prepare a proposal for construction of a modern lead and zinc plant near Alexandroupolis in northern Greece. Bulgaria is to export lead ore for processing in Greece. Lead mining will continue at the lead and zinc plant near Kurdzhali after reconstruction of the plant, which is expected to be finished before October 1992. (Sofia DUMA in Bulgarian 21 Feb 92 p 2)

EASTERN EUROPEAN MARKETS FOR BULGARIAN FOOD DECLINE: Exports of food products to Eastern European countries declined 60 percent in 1991. However, exports of raw materials for the food and tobacco industries only fell by 45 percent, and their relative percentage of total agricultural exports increased. Against a general background of declining demand from Eastern Europe, forecasts indicate that Bulgaria will continue to feed its traditional customers, although during 1991 almost no agricultural products were supplied to Hungary and the traditional trade with Poland and Czechoslovakia also showed a marked decline. However, demand from the CIS republics, traditionally Bulgaria's biggest customers, remains relatively stable. (Sofia DUMA in Bulgarian 21 Feb 92 p 5)

DEPOT FOR IRANIAN TRUCKS PLANNED ON DANUBE: A depot for Iranian trucks will be built at the port of Lom on the River Danube. The project will be financed by Iranian companies which will take advantage of the shorter distance to Europe and the lower tariff barriers. At present the port operates at only 30 percent of its capacity and the

cargoes from Iran are expected to revive it. (Sofia BTA in English 1541 GMT 24 Feb 92)

MINOLTA TO OPEN MORE SUBSIDIARIES: The Japanese Minolta Company is preparing to open subsidiaries in Blagoevgrad, Pirin Macedonia, and Ruse on the Danube. Minolta already has subsidiaries at Plovdiv, Varna, and Stara Zagora. The Blagoevgrad Electronics and Mechanics Plant, whose business is now at a critical low, has received exciting offers for cooperation from Minolta. (Sofia BTA in English 1541 GMT 24 Feb 92)

AGRICULTURAL, LIVESTOCK PRODUCTION DECLINE IN 1991: According to the National Statistics Institute, in 1991 the numbers of beef cattle fell by 10 percent, of poultry by 22 percent, and of pigs by 25 percent compared with the previous year. Dairy herds decreased to a total of 545,000 cows. Production of eggs fell by 23 percent, and the live weight of animals sent for slaughter decreased by 46 percent compared with 1990. (Sofia DUMA in Bulgarian 24 Feb 92 p 2)

INTERBANK FOREIGN CURRENCY MARKET TURNOVER IN 1991: In 1991 the 14 banks dealing in the foreign exchange market recorded a turnover of 2.1 billion U.S. dollars. The Bulgarian National Bank and 13 commercial banks purchased foreign currency valued at 1.084 billion U.S. dollars and sold 1.042 billion dollars worth. These figures were announced on 19 February by the Foreign Currency Operations Administration of the Bulgarian National Bank, which also reported that an intercompany foreign currency market will be launched within a week. (Sofia 24 CHASA in Bulgarian 20 Feb 92 p 8)

CZECHOSLOVAKIA

CATTLE HERDS REDUCED: Last year saw a major reduction of cattle herds in the state and cooperative sectors in the Czech Republic. The number of cattle declined by 425,007, including a 166,269 reduction in the number of cows. The number of pigs, on the other hand, increased, especially in the third quarter of the year. The highest figure was recorded in August -- 4,435,943 head. State-owned and cooperative agricultural enterprises began this year with 318,941 sows, which was more than 2,000 above the figure for January 1991. (Prague CESKE A MORAVSKOSLEZSKE ZEMEDELSKE NOVINY in Czech 20 Feb p 4)

TELECOMMUNICATIONS NEEDS FOREIGN CAPITAL: Telecommunications Minister Emil Ehrenberger says that telecommunications in Czechoslovakia needs modernization and that about 30 percent of the cost, estimated to reach \$5 billion by the year 2000, will have to be covered by foreign capital. "Talks have already begun," he adds, "with the U.S. telecommunications companies U.S. West and Bell Atlantic." (Prague LIDOVE NOVINY in Czech 19 Feb FINANCNI NOVINY supplement p 1)

CONSUMER PRICES RISE: Compared with December 1991, consumer prices increased in January by a moderate 1 percent overall. Food prices increased 1.3 percent, the cost of services 1.2 percent, and prices in public catering 1.8 percent. Prices of manufactured

goods registered the lowest rate of increase, 0.6 percent. The January increase in consumer prices was slightly lower in the Czech Republic than in the Slovak Republic, by 0.3 percent overall. Compared with the same period a year ago, January consumer prices in the CSFR rose 23.3 percent, in the Czech Republic 21.5 percent, and in the Slovak Republic 26.8 percent. In conjunction with consumer prices, the cost of living, too, increased slightly in January (compared with December 1991). The growth in the cost of living was higher in the Slovak Republic than in the Czech Republic (in the range of 4.4 to 6.6 percent). (Prague HOSPODARSKE NOVINY in Czech 20 Feb p 8)

BANKING MACHINES: Komerční Banka (Commercial Bank) has begun a test run of three Olivetti-made automatic teller machines (Master Card CIRRUS network) in downtown Prague. By the end of the year, there should be 50 such machines in the Czech Republic. (Prague HOSPODARSKE NOVINY in Czech 20 Feb p 2)

ANTIMONOPOLY MEASURES: The Federal Office for Economic Competition has ordered automobile parts manufacturer Mototechna Prague not to abuse its dominant position. The firm had sold some products only in sets although "this is not technically or commercially warranted." The office also banned the cartel tariff agreement between Czechoslovak Airlines and Slovair Bratislava. (Prague HOSPODARSKE NOVINY in Czech 20 Feb p 2)

LICENSED TRACTOR PRODUCTION: The first seven Same-Polaris tractors have been produced in Zetor Brno under license from the Italian Same company. According

to the contract, Zetor is to supply 1,800 such tractors to Same before the end of the year, and it will supply another 200 to the domestic market. Furthermore, the Brno company signed a contract for a shipment of a large quantity of tractors to North Africa -- 2,300 have been delivered to Tunisia, another 1,500 await shipping in the Slovenian port of Koper. (Prague MLADA FRONTA DNES in Czech 20 Feb p 11)

CAR IMPORTS, EXPORTS: Last year, 41,281 new cars were imported to Czechoslovakia and 182,549 cars exported. In addition, Czechoslovak citizens imported 105,000 second-hand cars. (Prague HOSPODARSKE NOVINY in Czech 21 Feb p 1)

DEPARTMENT STORES PRIVATIZED: According to Czech Privatization Minister Vaclav Jezek, the K-Mart Corporation of Detroit has been selected as the buyer of 70-percent interest in Maj, one of the two largest department stores in Prague. The remaining 30 percent will probably be sold to the First Investment stockholding company. Jezek says that Kotva, the other large department store, should not belong to the same owner as Maj. (Prague HOSPODARSKE NOVINY in Czech 21 Feb p 1)

RUSSIAN GAS TRANSIT TO FRG: Russian natural gas will now be exported to Germany across Czechoslovak territory on the basis of two new long-term agreements signed on 19 and 20 February in Prague. The first agreement involves the export of 7 billion cubic meters of gas per annum to the eastern laender. Representatives of Metalimex and the Czech Gas Enterprise signed the agreement with the German Verbundnetzgas company, a branch

of the Ruhrgas concern. The second agreement adds another 4.57 billion cubic meters of Russian natural gas to the exports across Czechoslovak territory. (Prague HOSPODARSKE NOVINY in Czech 21 Feb p 3)

WAGE REGULATION CHANGES, DEFICIT: At yesterday's news conference in Prague, Federal Deputy Prime Minister Pavel Hoffmann gave details of ministerial debate on 1992 wage control. The original maximum growth for the first half of 1992 was 4 percent, and the non-taxed deviation from the recommended growth was 3 percent, i.e., the total maximum growth was 7 percent. It was moved that the maximum wage growth for the first half of 1992 be adjusted to 8 percent and that the maximum non-taxable deviation be reduced from 3 to 2 percent for a total of 10-percent wage growth. In its session yesterday, the Federal Government approved a report on fulfillment of the federal budget and the total of state budgets for the first to fourth quarters of 1991. The preliminary results imply that the public budget total ended last year with a deficit of 12.3 billion korunas. While the state budget total reached a deficit of 18.6 billion korunas, the local budget total showed a surplus of 6.3 billion korunas. (Prague HOSPODARSKE NOVINY in Czech 21 Feb pp 1, 2)

UNEMPLOYMENT DATA: The growth rate of unemployment in the Czech Republic continues to be relatively favorable. Compared with December, the number of job seekers increased 4.3 percent, that is, by 9,452, in January 1992 and reached 231,201. The rate of unemployment in the Czech Republic reached 4.31 percent. Of the

total number of job seekers, 135,059 were collecting unemployment benefits. Compared with December 1991, the number of recipients of unemployment benefits declined by approximately 15 percent, chiefly as a result of legislative changes. At the end of January, the number of unemployed in the Slovak Republic reached 319,384, which was 17,433, or 5.6 percent, more than at the end of 1991. The relative monthly growth of unemployment was the lowest for the entire period since the beginning of 1990. The number of registered recipients of unemployment benefits declined by 77,797. (Prague HOSPODARSKE NOVINY in Czech 21 Feb p 8)

FIRST TREASURY BILLS: The Federal Ministry of Finance and the Czech Republic Ministry of Finance issued state treasury bills (statne pokladnicne poukazky) for the first time yesterday. Three billion korunas worth of Federal Ministry of Finance treasury bills and 10 billion korunas worth of Czech Republic Ministry of Finance treasury bills were sold at a Czechoslovak State Bank auction. The treasuries are intended for large investors (for the time being, only for commercial banks) and are traded on the secondary securities market. (Bratislava PRAVDA in Slovak 21 Feb p 2)

SLOVAK COUPON PRIVATIZATION: Of the total number of 1,953 enterprises in Slovakia that are controlled by state administrative bodies, 736 have been put into the first wave of privatization. The value of these enterprises' assets totals around 160 billion korunas, of which property worth 70 billion korunas is to be privatized by means of coupons. The remaining property will be sold directly,

either by means of auctions and public tenders or on the installment system. The state may retain possession of a part of the enterprises. (Bratislava PRAVDA in Slovak 21 Feb p 2)

PURCHASE OF CANADIAN PLANES:

The Canadian firm "Canadair" has been selected to supply C-601 E Challenger airplanes to the Czechoslovak Interior Ministry state air unit, Martin Fendrych announced today. The Canadian producer's offer was found most suitable among offers from the French firm Dessault, U.S. Gulfstream, and British Aerospace in the second half of 1991. Canadair has ensured 100 percent reciprocal import of Czechoslovak goods, including steel, and agreed to cooperate with the Czech Aero Let Kunovice company, which will produce components for Canadair planes. The Czechoslovak Government Presidium approved the purchase of one C-601 E Challenger airplane in 1992, and the contract was signed 14 February, Fendrych said. (Prague CSTK in English 1939 GMT 21 Feb)

UNSALABLE SUGAR: Slovak sugar refineries are facing severe marketing problems. The Trebisov sugar refinery in East Slovakia, for example, has in its warehouses some 17,000 tons of sugar, which is about 90 percent of its 1991 output. The refineries cannot sell their product because of cheaper prices of sugar from the Czech Republic and abroad. A further price reduction is not economically feasible. (Prague HOSPODARSKE NOVINY in Czech 24 Feb p 4)

GUARANTEES FOR WHIRLPOOL:

According to a contract signed last year, the American appliance maker, Whirlpool, should own a

43.8-percent interest in the Whirlpool-Tatramat company based in Poprad and invest \$30 million in it within two years. Like other foreign investors, Whirlpool demands investment guarantees. The request is a subject of current precedent-setting talks. (Prague HOSPODARSKE NOVINY in Czech 24 Feb p 4)

CSFR EXPORTS: Total Czechoslovak exports last year amounted to 321.2 billion korunas. The overall result of 1991 trade is a surplus of 25.2 billion korunas. The list of customers for Czechoslovak exports includes the following: The FRG -- 25.1 percent, the USSR -- 19.4 percent, Poland -- 7.3 percent, Austria -- 5.8 percent, Yugoslavia -- 5.0 percent, Hungary -- 4.4 percent, Italy -- 4.4 percent, Netherlands -- 2.9 percent, France -- 2.4 percent, Great Britain -- 1.9 percent, Switzerland -- 1.1 percent, the United States -- 1.0 percent, China -- 0.9 percent, Sweden -- 0.9 percent, India -- 0.5 percent, other countries -- 17.0 percent. (Prague MLADA FRONTA DNES in Czech 21 Feb p 11)

CSFR IMPORTS: Total Czechoslovak imports last year reached 296 billion korunas (a decline of 21.1 percent in comparison with 1990). The overall result of the 1991 trade is a surplus of 25.2 billion korunas. The list of suppliers includes the following: The USSR -- 32.3 percent, the FRG -- 20.1 percent, Austria -- 7.9 percent, Poland -- 4.9 percent, Italy -- 3.3 percent, Switzerland -- 2.4 percent, France -- 2.3 percent, Yugoslavia -- 2.1 percent, Great Britain -- 2.1 percent, Netherlands -- 2.9 percent, Hungary -- 1.9 percent, the United States -- 1.8 percent, Sweden -- 1.0 percent, China --

0.9 percent, India -- 0.4 percent, other countries -- 14.6 percent. (Prague MLADA FRONTA DNES in Czech 24 Feb p 11)

SKODA PRIVATIZATION: The engineering giant Skoda has been designated for the first wave of coupon privatization, with 49 percent of its shares distributed through the coupons, 38 percent kept in the national property reserves, 5 percent used as environmental compensation to the city of Plzen, 5 percent for restitutions, and the remaining 3 percent retained as additional reserves. (Prague MLADA FRONTA DNES in Czech 24 Feb p 3)

GABCIKOVO DAM FINANCING: The federal, Czech and Slovak finance ministers met today to discuss financing further construction work on the Gabčíkovo Danube River Hydroelectric project. Czech Finance Minister Karel Spacek told CSTK a number of Slovak banks will provide short-term credit for further work on the project. The three ministers also approved the financing of housing construction this year with funds raised through the issue of republic bonds. The Czech Republic has issued bonds valued at 8,700 million korunas (approximately \$300 million), and the Slovak Republic has issued bonds worth 4,200 million korunas (\$144.8 million). (Prague CSTK in English 2035 GMT 24 Feb)

NEW BANKNOTE, TWO NEW BANKS: The Banking Council of the Czechoslovak State Bank today approved a proposal for the printing of 200-koruna banknotes. Other banknotes in use are in the amounts of ten, twenty, fifty, one hundred, five hundred and one thousand korunas. The Banking Council also issued licenses to

the Investment Bank of Prague and the Bank for Investment and Development (Bratislava), both of which are stockholding companies. The banks, established through a privatization project, were formed from the State Investment Bank, which now ceases to exist. The Investment Bank of Prague has capital amounting to 1 billion korunas (\$34.5 million) and the Bank for Investment and Development (Bratislava) begins with capital of 500 million korunas, (\$16.7 million). The state will maintain 45-percent interest in the original capital, 3 percent will go for restitutions, and 52 percent for coupon privatization. (Prague CSTK in English 2110 GMT 24 Feb)

IRON ORE IMPORTS UP: According to the Federal Statistical Office, Czechoslovakia imported 12,028,000 tons of iron ore in 1991. In the 1988-90 period, Czechoslovak iron ore imports never exceeded 10 million tons. (Prague HOSPODARSKE NOVINY in Czech 25 Feb 92 p 1)

AIRCRAFT MAKERS LOOK WEST: The breakup of the Soviet market, which in the past absorbed up to 90 percent of Czechoslovak aircraft production, is now forcing Aero, a holding company associating 11 Czechoslovak manufacturers of aircraft and aircraft components, to look to joint ventures with Western companies to put the industry back on its feet. In 1991 the Aero holding company achieved only 53 percent of its 1989 sales, which stood at 6.8 billion korunas. Consequently, it has had to cut its staff from 31,000 in 1989 to 18,000. With basic capital of 5.3 billion korunas, the Aero holding company is known mainly for its small transport planes (L-410 and L-610) and its training jets (L-39

and L-59), of which it is the largest manufacturer in the world. According to Milos Chalupa, assistant director for the development of cooperation and joint ventures, the most promising of Aero's three potential partners (Boeing, Airbus, McDonnell Douglas) is Boeing, whose offer is "broader, more systematic, and, moreover, accompanied by very lucrative price terms." Boeing is interested in supplies for its latest 777 model but "cooperation on a joint program that would supplement the U.S. manufacturer's line is not ruled out either." Besides cooperation with Western countries, Aero is staking out new markets to replace the Soviet market, especially in Southeast Asia, but also in Australia, Africa, and South America. The easiest and cheapest way of penetrating these markets, Chalupa says, is to obtain certification from the U.S. Federal Aviation Administration. Chalupa hopes that the L-410 transport plane will be "fully certified" by the end of April. The FAA certificate for the L-610, the export version of which will be provided with General Electric CT-7 engines and Collins radionavigation equipment, should become available by mid-1993. The privatization project for Aero foresees the preservation of the structure of a holding company, with 50 percent of shares earmarked for the National Property Fund, 37 percent for coupon privatization, a 3 percent for restitution. The remaining 10 percent are to be sold to foreign banks. (Prague HOSPODARSKE NOVINY in Czech 25 Feb 92 p 4)

SWEDISH LOAN: A security (collateral) agreement was signed between the CSFR and the Swedish Nordic Investment Bank in Prague on 25 February. The Swedish Nordic

Investment Bank provided a specific credit of 65 million German marks to the Czechoslovak Commercial Bank to be used by Chemicelulosa Zilina for building a toilet-paper machine producing 50,000 tons of paper annually. (Prague TELEGRAF in Czech 26 Feb p 2)

EDB OPERATES IN CSFR: The Hamburg-based European Databank (EDB), which provides information to entrepreneurs, has opened for business in 35 cities in the CSFR. (Prague TELEGRAF in Czech 26 Feb p 14)

ELECTRICITY PRIVATIZATION PLAN: The CEZ (Ceske Energeticke Zavody) firm, the largest Czechoslovak company in terms of turnover, which has a virtual monopoly on the generation and distribution of electricity in the Czech Republic, will be privatized in the first wave of coupon privatization. Thirty percent of CEZ basic capital, which is valued at 51.3 billion korunas, will be privatized by means of coupons, 3 percent will be reserved for restitution to former owners, and 67 percent will, for the time being, remain in the National Property Fund. CEZ, which generated 51.6 terawatt hours of electricity in 1991 (62 percent of Czechoslovakia's total power output), owns power stations with an aggregate capacity of more than 12,000 megawatts. Coal-fired power stations account for 9,362 megawatts of its capacity, nuclear power stations for 1,760 megawatts, and hydroelectric power stations for 1,205 megawatts. Prior to privatization, the CEZ will be restructured. After this restructuring, the company should remain in charge of only the high-voltage distribution grid and power plant units with a capacity

of 50 megawatts or more. CEZ's five engineering and four assembly plants, its four heating plants, the Energovod and Orgrez organizations, and its small power plants are to be privatized separately. Although CEZ made a relatively high net profit of 10.6 billion korunas in 1991, General Manager Petr Karas does not expect the company to be able to pay dividends in the near future. The desulfurization and modernization of its power plants alone is expected to require investments of 70 billion korunas. According to Karas, the CEZ will probably get a 7.5 billion koruna credit from the World Bank to finance modernization projects. (Prague HOSPODARSKE NOVINY in Czech 25 Feb p 2, Prague MLADA FRONTA DNES in Czech 25 Feb p 11, Prague LIDOVE NOVINY in Czech 26 Feb FINANCI NOVINY p 2)

HUNGARY

CONVERTIBLE ACCOUNT SURPLUS \$267 MILLION: According to final figures published today by the Hungarian National Bank, Hungary's convertible current account showed a surplus of \$267 million at the end of 1991, as against \$127 million in 1990. These figures contrast sharply with the government's pessimistic forecast early last year of a 1991 current account deficit of \$1.2 billion. International reserves in convertible currencies rose to \$4.017 billion by the end of 1991, from \$1.166 billion a year earlier. Dollar-accounted gross convertible debt was \$22.657 billion, as against \$21.27 billion

at the end of 1990. (Budapest MTI in English 1629 GMT 24 Feb 92)

CHEMICAL COMPANY LAUNCHES NEW DETERGENT: Hungary's detergent market has considerably expanded in the last few years, as is shown by a turnover increase from 3.7 billion forints in 1988 to 6 billion forints in 1990, the latter figure representing some 140 tons of detergent. Imports have also increased, amounting to 455 million forints in the first six months of 1991 compared to 91 million forints in the first six months of 1990, reducing the demand for Hungarian products. Henkel and Unilever are the main foreign suppliers. In 1992, Tiszamenti Vegyiművek, whose sales dropped by about half, launched a new detergent called Tomi Crystal to regain some of its market share. The capacity of this enterprise is 60,000 tons of detergent a year. (Budapest NEPSZABADSAG in Hungarian 25 Feb 92)

NUCLEAR PLANT COMMERCIALIZED: In mid-February, the management of the Paks nuclear power station announced that the plant would be commercialized as a share-issuing corporation. However, state-owned enterprises or governmental agencies will be the primary stockholders because Paks has made no plans to offer stock to employees or foreign investors for the next several years. Hungarian Electrical Works, Inc. will hold a 50-percent stake in the company, and the State Property Agency (AVU) will own 49.84 percent of the stock. Ownership of the remaining shares will be divided among 10 local governments. (Budapest FIGYELO in Hungarian 20 Feb 92 p 5)

SHRINKING STATE SUBSIDIES: A recent FIGYELO article analyzed the decline in state subsidies to agriculture and firms in manufacturing, mining, and transportation. According to the 1992 budget plans, subsidies totaling 61 billion forints will account for only 6 percent of total government spending. Of this figure, 26 billion forints will be appropriated for agricultural price supports and for food industry export subsidies. The author of the article concludes that the level of Hungarian government subsidy payments to the economy is now on par with most Western economies. Further subsidy cuts are viewed as socially destabilizing. For this reason, the author advises continuing efforts to reform the subsidy allocation system within the context of the national budget, but without any reductions in the absolute level of subsidies. (Budapest FIGYELO in Hungarian 20 Feb 92 p 15)

EASIER CREDIT TERMS FOR FARMERS: While complete details were still unavailable in mid-February, the press reports that the government has decided to set up a low-interest loan fund of 10 billion forints for lending to farmers who are short of capital to finance spring field work. Loans would be discounted by 10 points under current market interest rates. The government believes that the capital shortage could also slow implementation of changes mandated under the transitional law on cooperatives. The government plans to intervene in corn purchasing, postpone due dates on existing farm loans, and raise the margins on available export pre-financing credits.

(Budapest FIGYELO in Hungarian 20 Feb 92 p 4; Budapest NEPSZABADSAG in Hungarian 15 Feb 92 p 5)

WORKERS RESIST STATE FIRM

RESCUE EFFORT: Employees of the Borsod Country division of the state-owned conglomerate Animal Protein Fodder Enterprise (ATEV) have staged a takeover of their plant to protest plans to reorganize and privatize the ATEV enterprise as a single unit. Workers were reacting to rumors that 60 of the plant's 94 employees would be laid off as a result of a retrenchment program aimed at propping up ATEV's nine other plants elsewhere in Hungary. The Borsod division of ATEV has been operating on a self-financing basis for the past 6 months, and employees want to have a say in its privatization as an independent firm. The workers were reported to have occupied the plant, blocking the entry of management and government officials and fending off threats of police intervention. (Budapest NEPSZABADSAG in Hungarian 15 Feb 92 p 5)

MUSHROOMING MUTUAL FUNDS: Many mutual fund investment firms have opened for business in the wake of passage of the Law on Investment Funds. A recent HETI VILAGGAZDASAG article described the initial business strategies of most of these new firms. Mutual fund portfolios will consist mainly of high-yield bonds issued and guaranteed by the government. Only three of the five government bond issues now on the market may be purchased by private parties. Private investors in all five bond issues will reap major tax benefits if they buy them in the form of mutual fund investment certificates. Some investment

firms plan to attract foreign investors only, while one firm--Buda Portfolio--plans to invest half of its capital in bonds and put the other half into the Budapest Stock Exchange. The firm justifies this unorthodox--from a Western perspective--investment strategy on the grounds that the Hungarian capital market is still limited in scope and weak and unable to compete with government securities in terms of return on investment. Some observers believe that the investment law already needs to be amended, and the Budapest Stock Exchange is considering measures to make stock investments more attractive. (Budapest HETI VILAGGAZDASAG in Hungarian 15 Feb 92 pp 91-92)

CLEARING AGREEMENT WITH BASHKIR

BANK: The Hungarian Credit Bank, Inc. has reached an agreement with Szocinvestbank, the largest commercial bank in the Bashkir Autonomous Republic in the Russian Federation. The accord covers clearing payments tied to barter transactions under a so-called "indicative list" of quota goods to be exchanged between Hungary and Bashkiria. Under the trade agreement, Hungary is to supply pharmaceuticals, medical equipment, dairy and meat processing equipment, food, IKARUS buses, wine, textiles, consumer goods, and forklifts in exchange for Bashkirian deliveries of raw and intermediate materials, including crude oil, gasoline, bitumen, unfinished iron and steel, petrochemicals, chemicals, synthetic rubber, timber, and raw animal hides. (Budapest FIGYELO in Hungarian 20 Feb 92 p 5)

GERMANS INVEST IN MINING

VENTURE: The Hungarian firm National Ore and Mineral Mining Enterprise, the German company

Hydro-Trade, and the local government of Mad have formed a joint venture for the exploitation of zeolite deposits in the Mad area. Zeolite is a natural or synthesized silicate mineral used in water softening and as an adsorbent and catalysts. The new firm--Zeotrade, Ltd.--emerged from the self-privatization of the Mad Mining Enterprise. With an investment of 334 million forints, Hydro-Trade will hold a 60-percent stake in the new firm. The Hungarian partner firm's share will be 29 percent, while the Mad local government acquires an 11-percent interest. With 10 million tons of proven zeolite reserves in the Mad area, the joint venture plans to up annual output to 100,000 tons within five years. Customers in Germany and the UK have already placed orders, and the firms expects to earn a profit of 30 million forints in 1992. (Budapest FIGYELO in Hungarian 20 Feb 92 p 5)

AUSTRIANS INVEST IN MINING

VENTUJRE: The DCI Bergau investment company has purchased a 50-percent stake in the Recsk ore mines, with the remaining 50 percent of equity remaining under Hungarian government ownership. The Austrian firm has invested \$20 million in cash, and the Hungarian government has made its investment in kind. The Recsk Ore Mining Enterprise is based on the exploitation of large copper and zinc deposits discovered in 1967. Total reserves are estimated to be about 560 million tons of both copper (0.72 percent purity) and zinc (3 percent purity). The Austrian partners plant to invest another \$150 million over the next few years, although the venture is not expected to show a profit until after the second half of 1994. Production will eventually

reach levels permitting discontinuation of current copper and zinc imports. Planned investments are expected to create 2,000 new jobs. (Budapest FIGYELO in Hungarian 20 Feb 92 p 5)

FARMING JOINT VENTURE WITH

RUSSIANS: The Hungarian firm IKR Production Development and Marketing, Inc. of Babolna has established a \$100,000 joint venture with the Pork Producers Union of the Samara region in Russia east of the Volga River. The Russian firm will hold a majority interest (51 percent) in the enterprise. Under the agreement, the Hungarian partner will supply sowing seed, insecticides, machinery, and technical assistance and training in Russian and Hungary. (Budapest FIGYELO in Hungarian 20 Feb 92 p 5)

COCOM LIBERALIZATION COULD EASE

DEFENSE CONVERSION: The weekly HETI VILAGGAZDASAG recently published an article discussing the reactions of Deputy State Secretary Zsolt Kohalmi, chairman of the Interagency Committee for Export Controls, to a recommendation advanced in early February by the Paris-based COCOM organization to lift all COCOM trade restrictions on Hungary. Apart from political advantages, implementation of such a proposal could speed industrial modernization in Hungary in terms of both civilian and military products. Removal of all barriers to imports of state-of-the-art technologies could aid modernization of the Hungarian armed forces and spur defense industries privatization, which is now "on the verge of collapse." Several Western arms producers have reportedly expressed interest in investments in Hungarian

defense plants. In addition to investments related to Hungarian production of defense goods under licenses and subcontracts, Western firms may also take an interest in restructuring the country's overbuilt defense sector to shift to civilian production. In a separate article on the same subject published on the same day, the daily NEPSZABADSAG writes that the lifting of COCOM restrictions depends entirely on Hungarian initiative. Hungary must adjust its export control laws in order to win COCOM relief, the paper writes. (Budapest HETI VILAGGAZDASAG in Hungarian 15 Feb 92 p 28; Budapest NEPSZABADSAG in Hungarian 15 Feb 92 p 5)

POLAND

FINANCE MINISTER EXPLAINS RESIGNATION: Finance Minister Karol Lutkowski cited differences over monetary policy as the reason for his decision to quit the Olszewski government. Interviewed by "Solidarity" Radio, he said "I did not want to agree to an increase in the money supply that would be faster than the rate of inflation and to strengthen enterprises with money." According to Lutkowski, state policy ought to be directed at maintaining a stable currency and not at the false stimulation of production. (Warsaw PAP in English 1850 GMT 21 Feb 92)

PLANNING OFFICE REPORTS WORSENING ECONOMIC INDICATORS: According to the Central Planning Office, the negative trends that characterized the Polish economy

last year became even more pronounced in January. Compared to January 1991, industrial output was down by 33 percent in the metallurgy sector, by 27 percent in light industry, and by 23 percent in the engineering industry. Unemployment was up by 75,000, meaning that 12 percent of the working age population is out of work, and retail prices rose by 7.5 percent compared to December. The average wage in the six basic sectors of the economy was 2,092,000 zlotys (about 190 dollars), that is, 9 percent lower than in December. The budget deficit was 5 trillion zlotys (around 450 million dollars), which amounts to 26 percent of state budget revenues. (Warsaw PAP in English 2029 GMT 21 Feb 92)

CHICAGO BUSINESSMEN HOLD WARSAW CONVENTION: A two-day Polish-American business conference opened in Warsaw on Saturday to discuss the establishment of direct contacts between Polish enterprises and Polish emigre businessmen. The conference is being attended by representatives of the Polish Businessmen's Club of Chicago and representatives of many Polish enterprises that want to establish trade and economic contacts with Polonian firms and are hoping to attract investment capital from the emigre business community to aid their privatization efforts. (Warsaw PAP in English 1339 GMT 22 Feb 92)

U.S. FIRM'S TAKEOVER OF AILING FINANCIAL CONSORTIUM: A Polish investment consortium which is in financial difficulties may have been taken over by Americans, although the situation is not entirely clear yet. A meeting of shareholders in the Bydgoszcz Capital Investment Consortium (BKKI) has been called for March

5, according to Jerzy Malec, the BKKI president. "An almost unknown American firm, which, with a 96-percent stake in BKKI, has become its principal shareholder has announced that it will attend the the meeting," said Malec, adding, "at the moment we do not have any documents on the matter, nor do we know the name of the firm." For the past week most BKKI branches have stopped dealing with customers because of cash flow problems. (Warsaw PAP in English 1043 GMT 24 Feb 92)

BRITISH INVESTMENT IN OIL

PROCESSING: Lord Weidefeld, head of a delegation of British businessmen now in Poland, said Monday that they planned to invest in the Polish oil processing industry. The British delegation familiarized itself with Polish Government strategy concerning energy during a meeting with Jerzy Eysymontt, head of the Central Planning Office, Monday. This branch of industry is to be privatized in the coming three years with the state retaining a controlling interest. The British industrialists took a special interest in the future of the petrochemical plants at Gdansk and Plock. (Warsaw PAP in English 1115 GMT 24 Feb 92)

CZECHOSLOVAK TANKS FOR SYRIA

ARRIVE AT SZCZECIN: The third batch of Czechoslovak weapons, 15 T-72 tanks for a Syrian customer, reached the port of Szczecin Monday. The Szczecin-based INTERSPED company told PAP that over 150 Czechoslovak tanks would be sent to Syria via the port over the next few months. (Warsaw PAP in English 1821 GMT 24 Feb 92)

RUSSIA CONFIRMS GAS DELIVERIES:

Russia has confirmed that it will deliver natural gas to Poland at

an annual level of 6.62 billion cubic meters, Mieczyslaw Ratajczak of the Polish Ministry of Foreign Economic Relations said on Monday. Russia has also agreed to increase the export of oil to Poland by 2 to 3 million tons. In return, Poland will export coking coal, coke, sulfur, and pharmaceuticals to Russia. (Warsaw PAP in English 2238 GMT 24 Feb 92)

BUDGET SHORTFALL THREATENS

PRIVATIZATION: According to the Ministry of Privatization, the costs of privatization in 1992 will amount to 600 billion zlotys (some 60 million U.S. dollars), while revenue is estimated at 4 trillion zlotys (400 million U.S. dollars.). The draft budget for the current year prepared by the Ministry of Finance envisages only half the sum that is required to carry out the privatization scheme, ministry officials told a news conference Monday. The shortage of resources will hamper the work started last year, ministry head Tomasz Gruszecki claims. He mentioned preparations for the privatization of 2,000 enterprises in the agricultural sector worth a total of 120 trillion zlotys (12 billion dollars) and accounting for 20 percent of all arable land. In addition, the ministry has been preparing a general privatization scheme which has covered 200 enterprises so far. The use of foreign resources can only marginally alleviate the difficulties, because they are mainly in the form of credits, Gruszecki said. (Warsaw PAP in English 2246 GMT 24 Feb 92)

HIGH IMPORT TARIFFS ON

FOODSTUFFS TO REMAIN: High customs duties for imported farm produce and foodstuffs will be maintained, a Polish Agriculture

Ministry official declared Monday in Poznan. Addressing a farmers forum in that western Polish city, Director Kazimierz Porebski did not rule out the possibility of limiting imports of some goods if the interests of Polish farmers are threatened. The forum was organized by Rural Solidarity. Its participants learned that the general concept of fixing minimum prices for farm produce had been approved by the government and that prices will be negotiated with the Agromarket agency and the trade unions. (Warsaw PAP in English 2329 GMT 24 Feb 92)

STATISTICS OFFICE NOTES

FEBRUARY FOOD PRICES: According to a report issued by the Main Statistical Office (GUS), the average rise in food prices in the second 10 days of February amounted to 0.2 percent compared to the first days. The GUS report also points to a decrease in prices of certain food products during the period. For instance, butter prices were 2.3 percent lower than in the first 10 days of February while prices of meat and eggs decreased by 0.1 and 5.2 percent respectively. An increase of almost 1 percent was reported in the prices of bread, tea, and coffee, while the price of potatoes and vegetables rose by 0.7 percent. (Warsaw PAP in English 2017 GMT 24 Feb 92)

CENTRAL BANK ANNOUNCES 12-PERCENT ZLOTY DEVALUATION: The Polish National Bank (NBP), acting in agreement with the minister of finance and the minister of foreign economic relations, has decided to increase by 12 percent the value of the basket of currencies, which will amount to 13,360 zlotys as of 26 February 26, says a communique issued Tuesday by the NBP press

spokesman. The structure of the basket of currencies, which is composed of the U.S. dollar (45 percent), German mark (35 percent), British pound (10 percent), French franc (5 percent), and Swiss franc (5 percent), will remain unchanged. The mechanism that allows the value of the basket of currencies to increase by about 1.8 percent a month will also remain unchanged, states the communique. The NBP president has taken account of current inflationary processes in the economy and the necessity to preserve the profitability of foreign trade. The decision also serves to adjust the value of the Polish zloty to other convertible currencies, the communique stresses. (Warsaw PAP in English 2037 GMT 25 Feb 92)

EC PROPOSES COMPROMISE ON AUTO DISPUTE: The European Community (EC) has proposed excluding automobiles from a trade agreement with Poland until the Poles stop discriminating against French cars, said diplomats in Brussels Wednesday. At an EC ministerial council session Tuesday, France threatened to block a trade deal with Poland from March to the end of the year, when full association agreements between the EC and Poland, Czechoslovakia, and Hungary come into effect. The accord allows for the duty-free import of 30,000 European cars into Poland, but the Polish authorities awarded these imports, 10,000 each, to Fiat of Italy and Volkswagen and Opel of Germany. France claimed unfair discrimination against French cars. (Paris AFP in English 1758 GMT 26 Feb 92)

ROMANIA

ROMANIAN-COSTA RICAN ECONOMIC COOPERATION: The fourth session of the Romanian-Costa Rican Inter Government Commission of Economic Cooperation took place in San Jose during 17-18 February 1992. The Romanian delegation was headed by Dan Constantinescu, minister of industry, and the Costa Rican by Hernan Castro Hernandez, acting foreign minister foreign. A protocol was signed on the development of commercial exchanges and economic cooperation between the two countries. It covers the expansion of Romanian tractor and farm machinery exports, the introduction of new products, such as rail cars or road maintenance equipment, and the import of products from Costa Rica, including coffee, sugar, and bananas. (Bucharest ROMPRES English 0747 GMT 21 Feb 92)

COCA COLA INVESTS IN ROMANIA: According to Nik Constantinescu, Coca Cola official in Bucharest, the recently founded "Coca Cola Bucuresti SRL" -- after striking a deal with former soft drink producer "Cico" -- will soon be able to achieve a production of 250,000 bottles daily. Additional production units are scheduled to start operating in Brasov (8,000 bottles per hour) and in Constanta (15,000 bottles per hour) by 1 June. (Bucharest ADEVARUL Romanian 22 Feb 92 p 2)

METHANE GAS SHORTAGE: Methane gas is still in short supply in Romania, Minister of Industry Dan Constantinescu said during a

weekly meeting with the press on 21 February. Since methane gas imports cannot meet household and industrial demands, the only option for the future is to switch large industrial consumers to fuel oil, which will leave enough gas for household use, he said. (Bucharest ROMPRES English 0823 GMT 24 Feb 92)

ROMANIAN SPACE AGENCY: The Romanian Space Agency, an institution subordinated to the Science Department of the Ministry of Science and Education, has been established. Its president is Academician Virgil N. Constantinescu, rector of the Polytechnic Institute in Bucharest, while its secretary is engineer and cosmonaut Dumitru Prunariu. The aims of the agency are to coordinate projects in space research and technology in Romania and abroad and to offer assistance to the Romanian Government on questions related to space research and technology. The Romanian Space Agency will also deal with the processing and distribution of data and information on space research and technology in Romania, the publication of specific documentation, and the training of experts in space research and technology in cooperation with university centers and research institutes in Romania and abroad. (Bucharest ROMPRES English 1525 24 Feb 92)

ACTIVITY OF CHAMBER OF COMMERCE, INDUSTRY: Romania's Chamber of Commerce and Industry has relations with almost all similar organizations in all the countries of the world. With 30 of them, it has concluded protocols on the organization of joint representations which will set up economic missions, develop

joint programs in various sectors, and support participation in fairs and exhibitions. The Chamber of Commerce and Industry of Romania has undertaken the necessary steps to become a full member of the International Chamber of Commerce of Paris. (Bucharest ROMPRES English 1755 GMT 24 Feb 92)

COMMUNICATIONS COOPERATION WITH

CANADA: During an interview in Bucharest on 24 February, Romanian Minister of Communications Andrei Chirica and the vice president for Europe of "Teleglobe" of Canada, Peter Filocelli, discussed Romanian-Canadian cooperation in communications. In a statement to the press, Mr. Chirica said the partnership with the Canadian company had developed substantially in recent years. "We intend to further develop that cooperation," he said, adding that "having in view the large number of experts working in Cernavoda (where a nuclear power plant is being built) we plan to improve direct communications with Canada." Peter Filocelli pointed out that "Teleglobe" was highly interested in cooperating with the Communications Ministry of Romania in both services and the manufacture of telecommunications equipment. (Bucharest ROMPRES English 1749 GMT 24 Feb 92)

COOPERATION WITH CASTROL:

"ARPECHIM SA" of Pitesti (the former petrochemical combine) has concluded a partnership contract with "Castrol" to restore an older oil plant. "Castrol" is to supply the necessary credits to modernize the plant, which has not been producing for the last 10 years, and production technology. The credits will be paid back from profits obtained by selling products with the "Castrol" trademark. The management of

"ARPECHIM SA" is negotiating with an Italian company to set up joint ventures for the manufacture of waterproof materials used in construction and with three British companies for the modernization of facilities in the Pitesti combine. (Bucharest ROMPRES English, 1808 GMT 24 Feb 92)

FEBRUARY EMPLOYMENT: At the end of the third week of February there were 2,135 job vacancies nationwide, of which 353 required personnel with higher or mid-level qualifications, while 1,962 jobs were offered to workers, the Ministry of Labor and Social Protection has announced. As in previous months, the number of vacancies is insignificant compared with the unemployment figures, which show 10,000 people losing their jobs every week. (Bucharest REALITATEA ROMANEASCA Romanian 25 Feb 92 p 3)

SEED POTATO SHORTAGES: The problem of importing seed potatoes has still not been solved, according to sources at the Ministry for Agriculture and Food. Most counties do not even know the exact amount of potatoes they need for sowings this spring. Since Romania has no seed potatoes of its own this year, France, Belgium, the Netherlands, Turkey, and Poland have offered to export the required quantity of potatoes. Nevertheless, negotiations have not even started with these partners. (Bucharest REALITATEA ROMANEASCA Romanian 25 Feb 92 p 3)

IMPORTS FROM BULGARIA: At the end of 1991, Romania had a trade surplus of 18 million rubles in its trade with Bulgaria. Since there is no hard currency to pay these debts, this year's Romanian-Bulgarian trade agreement

stipulates that Bulgaria should supply small tractors and other agricultural machines, batteries, and some electronic products worth that amount. (Bucharest ADEVARUL Romanian 25 Feb 92 p 2)

TEXTILE, LEATHER EXPORTS:

Romanian textile and leather exports were worth 103,641,000 rubles and \$322,722,000 dollars in 1991, according to the Ministry of Industries. State-run companies specializing in import-export operations exported items worth 103,572,000 rubles and \$184,002,000 in 1991. Private commercial companies exported products that stood on December 31 at 169,000 rubles and \$108,439,000. Direct exports of production companies amounted to \$30,281,000, the same source mentions. (Bucharest ROMPRES English 2030 GMT 25 Feb 92)

FOREIGN INVESTMENT IN ROMANIA:

\$1.19 million was invested in Romania over 10-14 February 1992, compared to \$26.85 million during the previous week. The largest investment, \$420,000, was made by the Israeli firm "Rafredco Holdings Management Ltd," operating in the building industry, tourism, and trade. Investors come from 30 countries: 19 from Germany, 18 from Syria, 17 from China, 15 from Turkey, 11 from Hungary and 10 each from Italy and Greece. Most businessmen are interested in trade, transport, light industry, and the food industry. Some 176 companies with foreign capital were registered during the above period, 15 of which are joint ventures. (Bucharest ROMPRES 1212 GMT 25 Feb 92)

TOURISM DIFFICULTIES: A number of economic problems have had a great impact on the development of

tourism, which at the start of the reform was regarded as a basic branch of the Romanian economy. Among the problems are soaring prices, social and political difficulties, poor management, and the fact that senior posts are occupied by people who cannot cope with the present situation. The consequences have been felt in the number of Romanian and foreign tourists and in revenues. A few figures available at the Ministry of Trade and Tourism speak for themselves: Whereas in 1990, 12,290 tourists were reported, of whom 11.6 percent were foreigners, a decline of about 30-35 percent is predicted for the current year, while the hotel occupancy rate will not reach 50 percent. In order to survive, tourism must become more dynamic. New tourist resources have to be identified and used, and environmental protection requirements must be strictly observed. (Bucharest ROMPRESS 1518 GMT 25 Feb 92)

TRADE WITH HONG KONG: "Romania is a country with great economic possibilities as far as both human potential and resources are concerned," Myra Mak, representative of the Council for Trade Promotion of Hong Kong, Vienna Branch, stated at a news conference held on 25 February at the headquarters of the Romanian Chamber of Commerce and Industry. Mrs. Mak said that during her short stay in Romania she would establish contacts for the promotion of bilateral commercial exchanges, especially collaboration with the Chamber of Commerce and Industry of Romania. "Business opportunities with partners in Hong Kong," she said, "will be presented to Romanian businessmen through commercial displays." (Bucharest ROMPRES English 0920 GMT 26 Feb 92 AU)

ECONOMIC MISSION TO ITALY:

Wishing to expand collaboration between Romanian and Italian businessmen, the Chamber of Commerce and Industry of Romania and the Romanian Development Agency will organize an economic mission from 26 February to 2 March together with AICSI, an organization that assists and develops international exchanges. The mission will promote business opportunities with Romanian partners in the textile and leather industries, as well as in the building of machinery used in these industries. (ROMPRES English 2031 GMT 26 Feb 92)

MERCHANT MARINE IN TROUBLE:

The Romanian maritime fleet, confronted with serious problems in 1991, had dramatic financial losses at the end of that year. High-ranking officials of the Ministry of Transport said the losses have been caused by the poor condition of the fleet, as no spare parts could be imported due to hard currency shortages, and the lack of funds for repairing ships in Romania. The volume of goods transported by sea was low, due to a 50-percent decline in the country's foreign trade. A minimum program of ship repairs would cost \$60 million and 8.2 billion lei [as received]. Ministry of Transport statistics show that 83 of the 252 ships that are operating do not meet international regulations on the safety of ships and navigation; about \$1.3 million are needed to equip the Romanian fleet with radio beacons, direction-finding equipment, wireless telephones, and radio receivers, as required by international regulations. (Bucharest ROMPRES English 0845 GMT 27 Feb 92)

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File Location: Articles and Pamphlets [1 of 2]

Date Closed: 6/4/2010	OA/ID Number: 62112-001
FOIA/SYS Case #: 2005-0336-F	Appeal Case #:
Re-review Case #:	Appeal Disposition:
P-2/P-5 Review Case #:	Disposition Date:
AR Case #:	MR Case #:
AR Disposition:	MR Disposition:
AR Disposition Date:	MR Disposition Date:

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information