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International Economic & Energy Weekly

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2 August 1985

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DI IEEW 85-031 2 August 1985

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2 August 1985

Sanitized Copy Approved for Release 2011/03/07: CIA-RDP97-00771R000807640001-7 Secret 25X1 25X1 International **Economic & Energy Weekly Synopsis** 25X1 Perspective—Advanced Composite Materials: Strategic Implications Advanced composite materials—primarily plastics and metals reinforced with carbon, metal, or ceramic fibers—are enhancing the performance of military systems and improving the competitiveness of a variety of commercial products. Growing foreign capabilities in advanced composites have a variety of strategic implications for the United States. 25X1 25X1 3 Advanced Composite Materials: Growing Foreign Capabilities The United States is generally acknowledged as the broadbased leader in advanced composites technology and continues to lead by several years in design know-how. Nevertheless, Western Europe and Japan have closed the gap in most areas and have developed leading-edge capabilities in a few materials and fabrication techniques. 25X1 7 25X6 11 Space WARC: Regulation of the Geostationary Orbit 25X1 The International Telecommunication Union (ITU) will convene the Space World Administrative Radio Conference (Space WARC) in Geneva on 8 August. Proposed changes in ITU radio regulations—a treaty which the United States has ratified—would affect both future US Government and commercial development of satellite communications. 25X1

Bolivia: Dimensions of Economic Reconstruction

encourage private enterprise.

The resounding rejection of the ruling party during recent elections indicates that voters are fed up with hyperinflation, economic deprivation, and work stoppages. Much will depend on the ability of the next administration to enact a market-oriented economic policy, endure criticism and opposition, and

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	International Economic & Energy Weekly	
	2 August 1985	25X1
Perspective	Advanced Composite Materials: Strategic Implications	
	Advanced composite materials—primarily plastics and metals reinforced with carbon, metal, or ceramic fibers—are enhancing the performance of military systems and improving the competitiveness of a variety of commercial products. Growing foreign capabilities in advanced composites have a variety of strategic implications for the United States. Increasing foreign availability of advanced composites will complicate US and COCOM efforts to control the flow of these militarily important technologies and equipment to Communist countries. The Soviet Bloc countries have already acquired many advanced composites technologies from Western Europe. Additionally, the growing diffusion of advanced composites technologies to developing countries promises to provide even more potential sources for the Soviets.	
(1	Diffusion of advanced composites technologies also raises concerns about weapons proliferation in the Third World. Although the developing world does not yet possess leading-edge capabilities, a number of countries are acquiring or developing fabrication equipment that could be used to produce weapons. Indeed, some Third World composites acquisitions appear more motivated by military than by civilian applications. We doubt, for example, that Brazil and Pakistan have justified the sizable expense of acquiring composites technologies merely for use in meteorological sounding rockets. In the judgment of one expert, India is acquiring carbon-carbon manufacturing equipment that is considerably more sophisticated than required for any civil application.	
5X1	Intense foreign competition, coupled with as yet small, uncertain markets, may discourage development of the US industrial base for making advanced composite materials	25 X 6
	As the number of foreign suppliers increase—and some will likely benefit from government subsidies or other targeting measures—some US firms could have increasing difficulty justifying investments in this area.	

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Failure to establish a strong domestic advanced composites supply could, over time, force military systems builders to rely increasingly on foreign sources of materials, manufacturing equipment, and know-how. The United States already relies on foreign sources for Japanese "raw" fibers from which military-grade carbon fibers are made. Although industry experts generally agree that the United States can establish manufacturing capabilities rather quickly for most of these advanced composite materials technologies, other dependencies could arise. The more rapidly composites technologies are developed overseas and the longer US firms delay establishing manufacturing capabilities, the more difficult market entry may become. Even if domestic research and development in these areas remains at the forefront, US firms may lack important process and quality control know-how gained only through experience in production.

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Advanced Composite Materials	•
Growing Foreign Capabilities 1	

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The United States is generally acknowledged as the broadbased leader in advanced composites technology and continues to lead by several years in design know-how. Nevertheless, Western Europe and Japan have closed the gap in most areas and have developed leading-edge capabilities in a few materials and fabrication techniques. Although demand for advanced composites is modest—about \$600 million in sales last year and global production of no more than 20,000 metric tons—usage has been growing at about 20 percent annually. These figures understate the commercial and military importance of advanced composites. They provide special performance benefits in aerospace applications and are a potentially key technology for space-based weapons proposed for the US Strategic Defense Initiative.

Foreign Programs

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Advanced composites technologies, both US and foreign, are spreading rapidly as composite materials suppliers, facing small domestic markets for their relatively expensive products, seek export opportunities. Composites fabrication is transferred to foreign firms through co-production arrangements such as those between Boeing and Aeritalia and Fuji Heavy Industries, because such processes are relatively unsophisticated and labor intensive. These features make composites manufacturing more adaptable than most high technologies to the infrastructures of many developed and Third World countries. Some of the latter, as well as countries such as Israel, are known

to be particularly interested in military applications of advanced composites.

Based on staffing levels, we estimate that the size of the combined foreign, non-Communist effort to develop and exploit composite materials is roughly equal to that of the United States where about 150 firms and perhaps 1,500 professionals are pursuing composites research and developments

Advanced commonitor contain two or more

Advanced Composite Materials at a Glance

Advanced composites contain two or more components—usually a polymer-, metal-, or ceramic-matrix material reinforced with long load-bearing fibers. Among their advantages are high strength-to-weight ratios and good fatigue, fracture, and chemical resistance.

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Composite materials offer a variety of benefits:

- Carbon-carbon composite heat shields have made possible the current generation of high-reentry-velocity ICBM warheads.
- Carbon-fiber-reinforced plastics (CFRPs) have made possible new, highly maneuverable aircraft.
- CFRPs—the only commonly used advanced composites—are improving fuel efficiency in vehicles by reducing weight, and can reduce fabrication costs of large complex parts.
- Metal- and ceramic-matrix composites are potentially the best materials both for high-temperature engine parts and for ultrastiff, dimensionally stable parts needed in systems such as space-based weapons.

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The West Europeans have capabilities second only to the United States in advanced composites technologies. These technologies are important to West European consortiums, such as Airbus Industrie, as well as to the individual countries. Composites are an important materials theme in the European Commission's new Basic Research in Industrial Technologies for Europe Program (BRITE). France, the United Kingdom, Italy, and West

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This article summarizes a forthcoming intelligence assessment.

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Germany have major capabilities in composites, and several others—the Netherlands, Sweden, and Spain—have capabilities for fabricating carbon fiber reinforced plastic (CFRP) parts adequate for many military applications:

- France has developed or acquired leading-edge capabilities in advanced composites, particularly in carbon-carbon materials, in support of its aerospace programs. The French maintain their leading-edge status with a strong research and development effort supplemented by acquiring key technologies elsewhere, through arrangements such as corporate takeovers and joint ventures.
- The United Kingdom has strong indigenous capabilities for developing, producing, and using advanced composites. Leading firms in the field are Imperial Chemical Industry and British Aerospace.
- The Italians and the West Germans also have strong capabilities for fabricating CFRP parts, primarily for airframes. Unlike the other major players. West Germany appears content to purchase needed composite materials from external sources. 25X1

The Japanese have focused more on the development and use of inexpensive advanced composite materials for potential applications outside the
small Japanese aerospace industry.
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Foreign Technical Capabilities

West European and Japanese firms are developing state-of-the-art capabilities for some important advanced composite materials. Some long-held US technological leads in older advanced composites

have been eroded, and foreign firms have seized the initiative in developing many of the newer materials. Meanwhile, differences in national capabilities are becoming blurred because transfers of advanced composites technology have been common among firms in many of the developed countries. Regarding the most important materials:

- The Japanese have a significant and widening lead in carbon fibers that has already given them 60 percent of the global market. Japanese firms are well positioned to dominate the commercial production of these materials by the 1990s.
- West European and Japanese firms have demonstrated polymer matrix materials with properties comparable to the best materials developed in the United States.
- The French lead in technology for carbon-carbon composites, combining expertise in the manufacturing technologies of weaving and infiltration.
- The United States and Japan lead other non-Communist countries in technology for metalmatrix composites. Japan may lag the United States in the sophistication of its metal-matrix technology, but has taken the lead in commercializing these composites.
- Although details are sketchy, we think France and Japan may have developed some ceramicmatrix composite materials with properties superior to comparable US materials.

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The United States is considered by most experts to have the best manufacturing technology for designing and fabricating parts from advanced composite materials:

• T	he US lead is largest	t in design, as	s illustrated by
tl	ne composite wings		

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 The United States is generally considered to have the best technology for consolidating epoxy CFRPs into finished parts—the size of such USmade parts is unmatched elsewhere.

• The United States leads Italy, Japan, and France in technology for automated tape-laying of CFRPs, as measured by the sophistication of equipment used in production.

Despite the general US lead in composites manufacturing, foreign competitors have developed leading-edge capabilities in some technologies:

 France has superior technology for weaving fibers into three-dimensional composite shapes. Weaving equipment made by the French firm Brochier et Fils achieves more even fiber spacing than does

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comparable US equipment, resulting in more reliable carbon-carbon parts.

- France and the United States lead in technologies for infiltrating those woven shapes with matrix materials.
- A West German firm makes the best filament winding equipment.

Applications Outlook

Industry experts generally agree that the aerospace industry will be the largest single market for advanced composites. Leading-edge use in the United States and abroad will continue to be in military aircraft, missiles, and helicopters. Next-generation fighter designs being developed in Western Europe and the United States may use up to 50 percent CFRP composites. Although demand for advanced composites for missile and space applications likely will remain modest for many years, large missiles typically use these materials.

We expect a considerably slower increase in the use of advanced composites in large commercial jet airliners. The forthcoming Airbus A320, scheduled for initial operation in 1988, will have only about 10 percent composites in its airframe. Moreover, the first use of composites in load-bearing structures in large commercial airliners may not even occur this century because of concerns about passenger safety, high per-part development costs, and availability of new lightweight metal alloys.

In the automobile industry, advanced composite materials have yet to find broad applications because of their high cost and competition from new metal alloys. For body parts—the largest potential application—many US and West European auto firms have focused on using weaker short-fiber composites from which parts can be fabricated quickly and cheaply by processes such as injection molding. Nevertheless, foreign as well as US auto firms are beginning to use advanced composites in parts such as drive shafts, axles, and springs.

Moreover, Japan's auto firms, in line with the intense national effort to develop low-cost, pitch-based carbon fibers, appear considerably more optimistic about the prospects for CFRP parts in automobiles than their competitors. One reason for this optimism could be the potential for producing fuel-efficient large cars. Another reason is that Japanese advantages in manufacturing costs—widely believed to be on the order of \$2000 per automobile—leave them more latitude to use costly advanced composites in performance-enhancing parts.

Advanced composites are beginning to find their way into a wide variety of industrial applications, from nuclear centrifuges to commercial robots. If costs can be brought down, perhaps by commercialization of moderate-cost pitch-based carbon fibers, we believe the use of advanced composites in industrial applications would grow rapidly. Gains in industrial uses, as well as further inroads in aerospace and automotive applications, will come largely at the expense of the aluminum and steel industries. Within this range of potential applications, we believe that aggressive West European and Japanese firms will continue to be major materials suppliers.

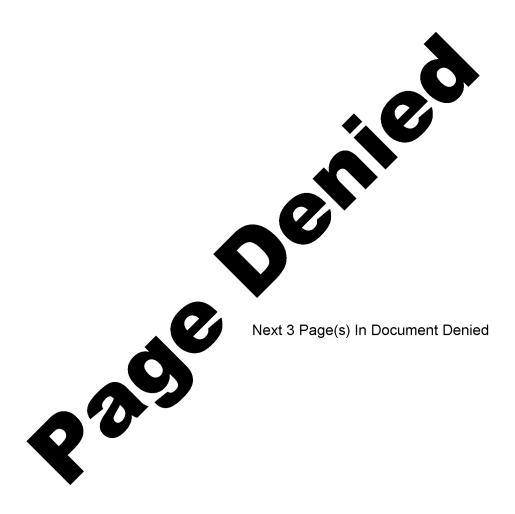
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Space WARC: Regulation of the Geostationary Orbit 1

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The International Telecommunication Union (ITU) will convene the Space World Administrative Radio Conference (Space WARC) in Geneva on 8 August. This planning conference—called at the behest of a coalition of developing countries—will consider a new system of national access to radiofrequencies and orbital slots for geostationary-orbit satellites. Proposed changes in ITU radio regulations—a treaty which the United States has ratified-would affect both future US Government and commercial development of satellite communications. Implementation of the new procedures will not be considered until the second session of Space WARC, scheduled for 1988. Under a worst case scenario, the outcome could threaten Western military communications systems.

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The Issues

While the agenda, accepted by the United States, technically empowers the Space WARC to consider all space telecommunications services, we believe that most of the effort will focus on broadcast (TV) and fixed-satellite services. Another potentially controversial topic is a new service dedicated to radio broadcasting from space. Political issues ranging from Soviet opposition to the US Strategic Defense Initiative (SDI) to a challenge to Israeli credentials could also come up.

The key technical issue at this first session, scheduled to run through September, is coming up with a new method for planning use of orbital slots and frequencies. Currently, a country planning to launch a satellite must publish information about the satellite no earlier than five years in advance, coordinate with other countries to avoid interference with existing systems, and then register the system with the ITU.

Many of the developing countries want to establish a system of prior planning that would permanently

assign orbital slots and frequencies to each country, regardless of current use patterns. Most major telecommunications users, including the United States and the Soviet Union, oppose this approach for the most heavily used frequency bands on grounds that it would create inefficiencies in their operations and stifle future developments in the space telecommunications industry.

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Other technical sticking points may include:

- Europe, Africa, and Asia need to agree on up-link frequencies (earth-to-satellite transmissions) for their television broadcast satellites. US military communications could interfere with some of the proposed frequencies.
- The agenda calls for this session to adopt a plan created in 1983 for television broadcast satellites for the Americas. Key countries from the other two regions, including the Soviet Union and some West European nations, oppose adoption of the plan until they have settled on the allocation of the up links. US commercial operators will find it difficult to secure financial backing for television broadcast satellites until a plan is internationally recognized.
- Most members of the conference, except the Soviets and their allies, would like to agree on setting up a new satellite service for radiobroadcasting from space. The frequencies considered so far interfere with existing users; the conference probably will agree to broaden the range of frequencies to be considered.

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The political issue most likely to plague the United States at Space WARC is a Soviet-inspired attack on the SDI under the guise of restraining "nonpeaceful uses of outer space." We believe Moscow will propose a principle on peaceful use of the geostationary orbit that attempts to corner the United

¹ This article summarizes a forthcoming intelligence assessment.

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The Geostationary Satellite Orbit

A geostationary satellite is launched into a circular orbit in the plane of the equator at an altitude of approximately 35,800 kilometers. It orbits the Earth at the same rate as the Earth's rotation. When viewed from the Earth, the satellite appears suspended over a fixed point on the equator. Earth stations remain directed at such satellites without the need for expensive, complicated tracking equipment. Among the functions of satellites in this orbit are telecommunications and broadcasting.

States, which makes more use of this orbit and frequency spectrum than any other nation. A long-term, detailed plan that allows each country equal orbital slots and frequency assignments in frequency bands of US interest would jeopardize US commercial and government interests. Among the US concerns are protection of:

- US government communications systems.
- Commercial communications and broadcasting satellites.

Geostationary satellites using the same frequency bands may interfere with each other or with other systems on the same frequencies. Interference depends on:

- Separation between the areas on Earth the satellites are servicing.
- The technology in the satellite and its Earth stations (particularly the directivity and polarization of antennas).
- Separation between the satellites.
- Other systems, not in the geostationary-satellite orbit or on Earth (such as aircraft and ships), sharing the same frequency bands.

Space technology is rapidly evolving, allowing a greater satellite communications capacity and closer spacing of like-frequency satellites than before.

• Global satellite operations.

- US policies for competitive access to the geostationary orbit.
- US monetary contributions to ITU operations.

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States on disarmament issues. Several other political issues likely to draw fire include: the UK-Argentine dispute over the Falklands and territories, special treatment for LDCs, sovereignty claims to the geostationary orbit by the equatorial countries—primarily Colombia, Ecuador, Kenya, and Indonesia—and anti-Israeli rhetoric.

Key Countries and Groups

We believe that investment in space systems, affiliations with global and regional telecommunications systems, and political alignment will, for most nations, determine positions at the Space WARC. The industrialized nations have the greatest stake. A few developing countries have their own satellites—most merely subscribe to international systems.

- The developing countries. The 101-member Non-Aligned Movement (NAM) will work actively in the Space WARC to organize LDC positions. Brazil, China, India, and Indonesia, however, have their own communications satellites and consequently will be less eager to make changes which could affect existing systems.
- The Soviet Bloc. The Soviet Union is the second heaviest user of the geostationary-satellite orbit and, like the United States, will seek to protect its access to the orbit and the frequency bands allocated for use by satellites. We believe the USSR will try to achieve this objective but, at the same time, try to appear to side with the LDCs.

25X1 US Interests

The stakes are high. The geostationary orbit plays a key role in the economic and military security of many developed countries, especially the United

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Impact on the United States of Possible WARC Outcomes

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Outcomes	Impact on the United States	Likelihood
LDCs and some major satellite-owning countries agree on rigid plan		···
In frequencies not used by the United States	Neutral	Probable
In commercial frequencies	Negative	Possible
In frequencies of US concern	Negative	Probable
US isolated against rigid plan		
In frequencies not used by the United States	Neutral	Possible
In commercial frequencies	Negative	Unlikely
In frequencies of US concern	Negative	Possible
Consensus with US agreement on new flexible approach for regulating orbit		7
In frequencies not used by the United States	Positive	Possible
In commercial frequencies	Positive	Possible
Regions differ/Regions 1 and 3 plan, Region 2 delays a		
In frequencies not used by the United States	Neutral	Possible
In commercial frequencies	Neutral	Possible
In frequencies of US concern	Negative	Possible
Stalemate/declare failure	Positive	Possible
LDCs pass rigid planning; no satellite-owning countries support		
In frequencies not used by the United States	Neutral	Unlikely
In commercial frequencies	Neutral	Unlikely
In frequencies of US concern	Neutral	Unlikely
New consensus on status quo	Positive	Very unlikely

^a The ITU divides the world into three regions—Region 1 (Western Europe, Africa, and the USSR), Region 2 (the Americas), and Region 3 (Asia and the Pacific).

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- The Western nations. In our judgment, the Western industrial nations will agree generally with US objectives, but differences exist. The West European nations, under the apparent guidance of the United Kingdom, oppose incorporation of the Western Hemisphere broadcasting plan into the ITU radio regulations, according to State Department reporting. We believe they want to finish their own broadcasting plan first so that all the regional plans can be reviewed at the same time. Australia, Canada, and Sweden indicate that they support variations of rigid planning.
- Without full support from these countries, the United States will face an uphill struggle in avoiding some form of fixed assignments.
- Other groups with influence. Only countries can vote at ITU conferences. Other bodies, however, both international and regional may speak, submit papers, and lobby at ITU sessions. INTELSAT and INTERSPUTNIK probably will play the biggest roles.

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Possible Outcomes and Implications

We believe there is a good chance that Space WARC will make decisions detrimental to US interests. The delegates may either make decisions outright at the first session or ask an intersessional group to study some provisional choices. Odds are that the LDCs and some major satellite-owning countries will agree on a rigid plan affecting some frequencies currently used by the United States for national security purposes.

The next best hope for the United States is that the conference make only provisional decisions on regulating the orbit and the spectrum, leaving it to an intersessional study group to determine feasibility and make recommendations to the 1988 session. This would allow time to put additional pressure on other satellite-using countries to stand firmly behind a more flexible approach to planning.

The best hope for the United States is that other satellite-owning countries stand firm on maintaining flexible procedures for regulating the orbit, or—as a fallback position—limit planning schemes to just enough of the spectrum to satisfy LDC demands. If the satellite-owning countries remain united in opposition to whole-scale planning, then—even if the conference votes for such a scheme—the more advanced countries probably would be in a position to take reservations.

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The resounding rejection of the ruling party during recent elections indicates that voters are fed up with hyperinflation, economic deprivation, and work stoppages. With labor discredited and the radical left divided, the current front-runners—the final selection of the president by the Congress is scheduled for today—are promising to attempt economic reconstruction. The implementation and success of such efforts, however, will depend on the ability of the next administration to enact a market-oriented economic policy, endure criticism and opposition, and encourage private enterprise.

Anatomy	of	8	Crisis

Economic policy under President Siles was geared to gaining popular support for the government by granting massive wage concessions, and increasing government spending and subsidization by printing money. The results have been disastrous:

- Inflation—running at 8,900 percent for the 12 months that ended in June—is the highest in the world and caused industrial production to decline 22.4 percent in 1984.
- Thirty percent of the labor force is unemployed or underemployed, and real wages have fallen 20 percent, according to the US Embassy. Consequently, strikes for increased wages continually disrupt the economy.
- Decreasing per capita income has resulted in sharp cutbacks in consumption of basic food items. A UNICEF study states that 60 percent of Bolivia's children suffer malnutrition.

The economy is also reeling under major structural problems. Controls on bank interest rates in the face of galloping inflation have destroyed the incentive to save. In May, private commercial bank deposits totaled only \$11 million, according to the

Bolivia: Economic Indicators			Percent	
	1982	1983	1984	
Real GDP growth	-6.6	-8.6	-3.7	
Inflation	297	328	2,177	
Change in money supply	230	210	1,890	
Ratio of public-sector deficit to GDP	7	18	23	
Ratio of external public debt to GDP	46	55	80	
Ratio of debt service to exports	42	45	55	

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US Embassy. Inept administration and economic controls have driven the mining sector to the brink of bankruptcy, with tin production falling 25 percent over the past year. Massive cash transfers to government-owned enterprises, consumer subsidies, and tax evasion caused a fiscal deficit equal to at least 23 percent of GDP in 1984, according to US Embassy reporting.

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Government price controls have led to massive smuggling, as well as thriving black markets. Smuggling by Bolivian producers accounts for the fact that in 1984 Peru's official tin production far exceeded its reported production capacity. On the black market, consumer staples are bought and sold at premium prices, and a dollar fetches 12 times the official exchange rate. The US Embassy reports that as much as 50 percent of all economic activity takes place outside of the formal economy.

La Paz has refused to work with bankers and the IMF and is now in default on its commercial bank debt. The government claims that its foreign currency reserves are exhausted. The US Embassy

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Bolivia: Current Account Trends Million US \$

1982	1983	1984 a
-93.8	-183.6	-245.0
399.0	275.0	224.0
827.7	756.8	695.0
428.7	481.8	471.0
-492.8	-458.6	-469.0
	- 93.8 399.0 827.7 428.7	-93.8 -183.6 399.0 275.0 827.7 756.8 428.7 481.8

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reports that the current account deficit rose to \$245 million in 1984, despite the suspension of interest payments to foreign banks.

Campaign Promises

The two front-runners in the current bid for the presidency both favor a return to more market-oriented policies aimed at reinvigorating the economy. Former President Hugo Banzer, who won the count of valid votes by a narrow 2.7-percent margin but is unlikely to emerge as president from the congressional balloting, has publicly promised drastic measures beginning with the deregulation of exchange rates, prices, and interest rates. He says he would reduce the fiscal deficit by cutting government employment and raising taxes, and by selling off or shutting down inefficient government mining companies.

Victor Paz Estenssoro, who probably will be selected president with the support of a leftist coalition in Congress, has yet to announce a comprehensive economic program. According to the US Embassy, Paz favors a more gradualist approach, promising to move exchange rates and consumer prices toward market levels over time. He has also promised to reduce fiscal deficits, improve the management of state enterprises, and remove current export obstacles.

According to press and Embassy reports, both candidates would promote agricultural development. Banzer believes the government should encourage privately owned farms in the underdeveloped lowland, providing a greater incentive to increase production. Paz, too, wants to expand private agriculture, as well as cooperatives. The US Embassy reports that Paz wants to attract international assistance and provide subsidies to farmers to convert from coca cultivation to staple crops.

According to the US Embassy, both Banzer and Paz plan to promote foreign investment—although neither has announced specific measures—as well as renew talks with the IMF. Foreign investment would provide a much-needed source of capital and management skills, especially in the oil and gas sector. An IMF agreement will be required to renegotiate commercial debts, resume regular debt payments to private banks, and reestablish trade credit lines to revive imports already pared to the bone.

Beyond the Candidates' Proposals

Based on the experiences of governments that have been successful in breaking hyperinflation, we believe additional fiscal discipline would be necessary. A currency reform accompanied by strict control over the printing press is a prerequisite. To control the money supply, we believe La Paz will need to separate the Central Bank and Treasury functions. A temporary wage and price freeze could be imposed to ensure public support and dampen inflationary expectations. Most governments that have been successful in breaking the inflationary spiral have also implemented wage restraints

Beyond this, La Paz must, in our view, rein in its state-owned enterprises. Eliminating subsidies to state companies would help decrease the deficit and free up credit for the more productive private sector. Capital formation and domestic investment would be encouraged by restoring positive real interest rates on regulated bank accounts.

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Hyperinflation During the Weimar Republic

The German Weimar Republic endured hyperinflation for 18 months. By November 1923, prices were increasing at a rate of 30,000 percent a month, causing price signals to go haywire. Prudent activities—such as savings and investment—became folly, but speculation created wealth. Moreover, real wages fell, despite indexation that merely escalated the hyperinflationary spiral.

At the end of 1923, a determined and toughminded Reichsbank president, Hjalmar Schacht, implemented a series of measures that halted inflation and stabilized the economy:

- A new currency was issued and backed by mortgage bonds on Germany's land and physical assets.
- In order to regain control of the money supply, the Central Bank refused to accept private currency issued by businesses and municipalities in a total amount as great as that of the official currency.
- The amount of credit outstanding was frozen, and the subsequent shortage of money caused hoarders to convert foreign currency into marks, bolstering the exchange rate. The credit freeze also led to an inflow of money that had been held abroad.
- Government employment was cut.
- New taxes were imposed, and real income from taxes already in place increased dramatically as restoration of order made collection easier, and currency stabilization ended the incentive to lag tax payments.
- Loans of special marks backed by gold were made on a "constant value" basis, payable in gold marks sufficient to represent the original value, not the depreciated value, of the loan. Thus, debtors no longer benefited from inflation.

We believe La Paz needs to diversify exports to restore debt-servicing capacity. Tin—the traditional export mainstay—will continue to lack competitiveness on the world market because of high production costs

Natural gas sales to Argentina, now the largest foreign exchange earner, are vulnerable because Buenos Aires has its own gas deposits. To this end, Bolivian gold and lithium deposits could be exploited, and natural gas sales negotiated with other South American countries, particularly Brazil. According to the World Bank, uncultivated fertile lowlands could produce large legal export crops.

The Uncertainties Ahead

Given the resounding defeat of the ruling party in the current election, we judge that most voters—weary of hyperinflation—would provide initial support for a thoroughgoing economic reform and stabilization program. It is also clear from past attempts at economic adjustment in Bolivia that popular opposition would develop in response to government layoffs, tax increases, and the retraction of subsidies, and could easily cause the government to backslide in key areas.

Military and labor reaction will also be crucial. the largely conservative military establishment blamed Siles's vacillating economic policies and his failure to deal firmly with labor for causing serious social unrest. Consequently, we judge that the armed forces would probably support stabilization measures. In contrast, the Confederation of Bolivian Workers would push hard to obstruct the government. Although labor will continue to be a major obstacle, the internal divisions within the country's largest worker's confederation and the public disenchantment with excessive strikes should work to the advantage of any new government. If the government tries to ban strikes, however, as occurred during Banzer's first administration, such action could lead to violence that would undermine stabilization.

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Beyond the political challenges, economic reconstruction will be difficult to put into practice. We judge there is insufficient technical talent to implement thoroughgoing reforms. Moreover, the highland Indians in the past have resisted relocation to the lowlands—a key feature of agrarian reform.

The drug sector, the only portion of the economy where government does not intervene, would continue to thrive as the sole viable economic alternative.

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The Danger

Without reconstruction, however, Bolivia's formal economy will likely be paralyzed by hyperinflation that could move into seven digits. Virtually all economic activity would probably occur through barter and on the black market. Savings would become nonexistent, while external insolvency would continue.

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,		Energy	
•	Inadequate OPEC Price Cuts	Token price reductions agreed to at last week's OPEC ministerial meeting are unlikely to alter the market's view that the organization is impotent. The oil ministers agreed by majority vote to cut medium-grade oil prices by 20 cents per barrel to \$27.20 and to lower heavy crude prices by 50 cents to \$26. The organization plans to meet again in October to discuss production quotas. Industry sources of the US Embassy in Riyadh claim the Saudis do not plan to carry out their threat to flood the market with oil unless OPEC fails in October to agree to a new output allocation scheme. In that case, the Saudis may be willing to risk a price war to regain their share of the market. OPEC needed to cut heavy oil prices about \$1.50 per barrel to bring them in line with spot market rates, and Venezuela would have to lower prices even further to	
50X1-H	HUM	meet Mexican competition.	25X1
•	Pushing the Iraqi-Saudi Pipeline Into Service	Oil could flow through the new Iraqi-Saudi pipeline in September before the line is fully operational, according to the US Embassy in Riyadh. Saudi authorities have tentatively approved the contractor's unusual plan to operate the line manually for several months until electronic controls are installed. Project managers believe construction will not be complete before early November, and early export rates will be limited to about 200,000 b/d, according to the US Embassy in London. Early use of the line will minimize the effect of delays in completion and support Iraq's request for a higher	
		production quota at a special OPEC meeting proposed for October. Although the line could be manually operated at 500,000 b/d, Riyadh may claim safety concerns to limit the flow of Iraqi oil into a tight market. Unless other producers cut back, even a small increase in Iraqi production would add to price pressures.	25 X 1

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Shakeup at National Iranian Oil Company	The National Iranian Oil Company (NIOC) has replaced its marketing manager because in May he used barter deals to move bulging stocks at the Sirri transshipment terminal, according to a source of the US Embassy in Kuwait. The new marketing chief disapproves of barter. In May the president of NIOC stepped down amid similar criticism of sales policies. These personnel moves reflect serious disputes within the regime over oil policy. The Oil Ministry and NIOC prefer cash sales, but lack of hard currency has pushed other ministries to meet import needs through barter deals. NIOC is blamed by the Consultative Assembly (Majles) for Iran's foreign exchange shortage but is also criticized for selling oil too cheaply when it attempts to increase sales.	25X1
Nicaraguan-Mexican Oil Deal	After sharply cutting oil deliveries to Managua over the past year and one half, Mexico has agreed to provide up to 20 percent of its needs in 1985. Mexico City had suspended oil shipments between March and June, ostensibly in response to repayment problems but also because of political considerations.	25X1
	to show solidarity with the Sandinis-	25X1
	tas and maintain political leverage, Mexico City is unlikely to stop oil shipments completely in the near future.	25 X 1
Brazilian Oil Find	The Brazilian National Oil Company (Petrobras) has discovered a giant offshore oilfield in the Campos Basin, The field is believed to contain 1-2 billion barrels of oil and may increase Brazil's oil reserves by more than 50 percent. Petrobras believes the field can be developed profitably if oil prices remain above \$15-20 per barrel.	25X1
	Brazil's aggressive offshore exploration is paying off. Oil reserves have increased over 200 percent during the past five years to an estimated 3 billion barrels. Production has risen dramatically to over 550,000 b/d during the same period. Petrobras's experience with earlier production systems in conjunction with US and West European deepwater technology will allow rapid development of the	25X1
25X1	field despite its depth. In addition, continued exploration in the Campos Basin is likely to lead to more discoveries.	25 X 1
		50X1-HUM

better terms, and guaranteed debt seem willing to e ready to begin in loans. Debt to th loans for Hungar bined obligations begin to fall this	ink credits largely in to cover pay is also likely to cover the cover more trade in porting more can be world Bank is ry and Yugoslavia, I year, but, if Polaticould begin grown	y to refinance ments deficited to the continue rising the credits, and pital goods ty likely to increa. Under prese Romania, and and joins the liwing rapidly a	existing common existing common existing and existing the East Europically finance as a resultant arrangem Hungary to the Europical existing in 1986,	mercial debt on officially- orn governments opeans appear ed with these t of major project ents, the com- the IMF should East European	25 X 1
Gross debt	85,841	80,568	81,600	80,795	
Commercial	59,552	52,778	48,110	42,700	

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7,368

6,680

7,989

25X1

4,984

IMF/IBRD

^a Preliminary.

Hungary signed a \$300 million syndicated loan in June, cofinanced with the World Bank, and earmarked for the modernization of the petrochemical, food-processing, and transportation industries. The interest rate was set at 0.75 percentage point over LIBOR for eight years for the commercial bank portion and 10 years for the World Bank share. Oversubscription of the commercial bank portion resulted in an additional \$125 million credit from Western banks with the same terms. The loan is part of an \$800 million package that also includes a \$250 million Eurodollar loan provided directly by the World Bank and a \$125 million cofinanced yen loan from Japanese banks.

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Poland Still Seeking Credits

Poland is seeking \$600-800 million in new credits from Western governments in the wake of last month's rescheduling of about \$11 billion in official debt which became due during the period 1982-84. Its chances of receiving significant funding soon appear slim. Earlier this year, Warsaw requested \$1.7 billion in credits from Western governments, but received no firm commitments. NATO sanctions on new credits to Poland are still in effect, but some countries, including the United Kingdom and West Germany, have indicated they will base their lending on economic rather than political grounds. Even the economic grounds are shaky—a recent survey by US embassies found that most countries are waiting for complete payments on the 1981 and 1982-84 rescheduling agreements and the signature of a 1985 accord before making a decision on new loans. The Poles probably will be at least \$500 million short of meeting the minimum payment required by governments. Even if some payments are forthcoming, the West Germans plan to grant only \$30 million, while the British and Swedes may provide only small short-term credits. The Danes probably will not extend any new credits, while the Portuguese, Greeks, and Canadians have yet to decide.

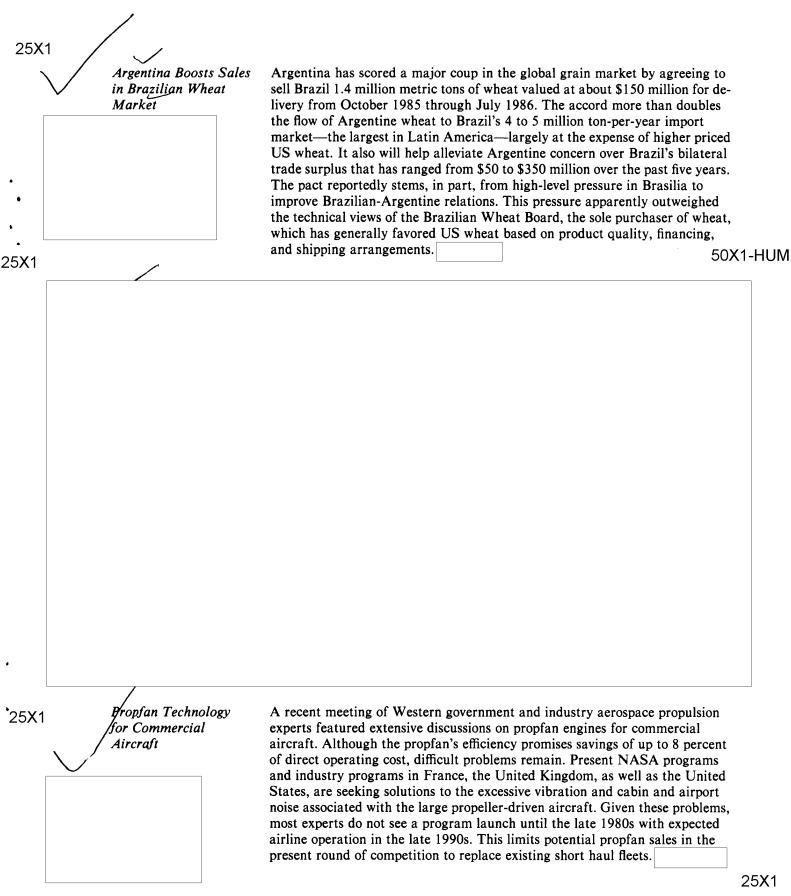
Advanced Technology and Regulatory Concerns of Airbus A320 25X1

Global and Regional Developments

Use of advanced technologies on the new 150-seat A320 presents difficulties for airworthiness certification in Western Europe and the United States. The "fly-by-wire" control systems, advanced cockpit technologies, and "relaxed static stability" aerodynamics do not technically comply with published flight standards. The new technologies, nevertheless, have the ability to provide levels of flight safety and passenger comfort far in excess of existing commercial aircraft. We believe the Airbus consortium has taken significant steps to ensure the A320's certification.

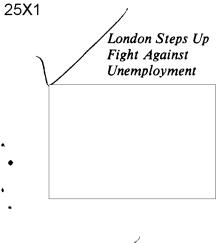
	Overall, we believe that the A320 is likely
to inspire US aircraft manufact	urers to apply similar advanced technologies i
future designs.	

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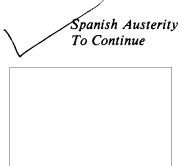
	Ned-well Dandenman	
	National Developments	
	Developed Countries	25V1
		25X1
Japanese Semiconductor Investment Declines	Japanese semiconductor manufacturers are continuing to reduce investment levels for plant and equipment this fiscal year. Although the amounts noted in Japanese press reports vary, the trend has been sharply downward since February when Japanese semiconductor makers were reporting plans to increase their investment level 10 to 20 percent above the record fiscal 1984	
	levels (up to 1 trillion yen, or \$4 billion by one estimate). By May planned investment levels were revised downward to 6 to 7 percent less than in FY 84. Since then, five of the nine major manufacturers—Hitachi, Toshiba, Fujitsu, Matsushita, and Mitsubishi—have announced planned cuts of 10 to 30	25 X 1
	percent. Japanese semiconductor investment should exceed reduced US levels again by about \$500 million. We believe that the decline is driven largely by the current downturn in semiconductor sales as well as by US criticism of high Japanese	25X1
/	capital investment levels.	25 X 1
		25 X 6

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The Thatcher government took a series of steps in mid-July to bring down the 13-percent unemployment rate. In a reversal of policy, London said it would begin to use state funds to encourage companies to shift orders to areas hit hardest by unemployment. Employment secretary King told a gathering of business leaders that the "on-your-bike" approach—referring to the government's philosophy that workers should relocate to find jobs—has its limits. London also announced proposals for broad deregulation of small businesses and removing youth from minimum wage controls to stimulate job creation. Thatcher can be expected to take even more active measures on unemployment as national elections—due by mid-1988—draw nearer; polls show the public continues to view unemployment as the most serious problem facing the nation.

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Spain's new Minister of Economy and Finance, Carlos Solchaga, has pledged to adhere to the austerity program introduced in 1982 by former Minister Boyer. In particular, Solchaga aims to further cut the budget deficit as a percentage of GDP in an effort to reduce inflation, nudge down real interest rates, and avoid crowding out private investment. Anticipating pressure to accelerate government spending before next year's elections, he stated firmly that an expansionary policy would provide only a short-lived stimulus that would reverse the progress made thus far. Solchaga tried to strike a less confrontational stance than his predecessor by offering to discuss economic policy with labor and business leaders. Nevertheless, we believe Solchaga's commitment to tough austerity—including wage moderation, pension cuts, layoffs in declining industries, and labor reforms—makes a reconciliation with the Socialist trade union unlikely.

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25X1 Soviet Oil Credit
Terms for Nicaragua

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Less Developed Countries

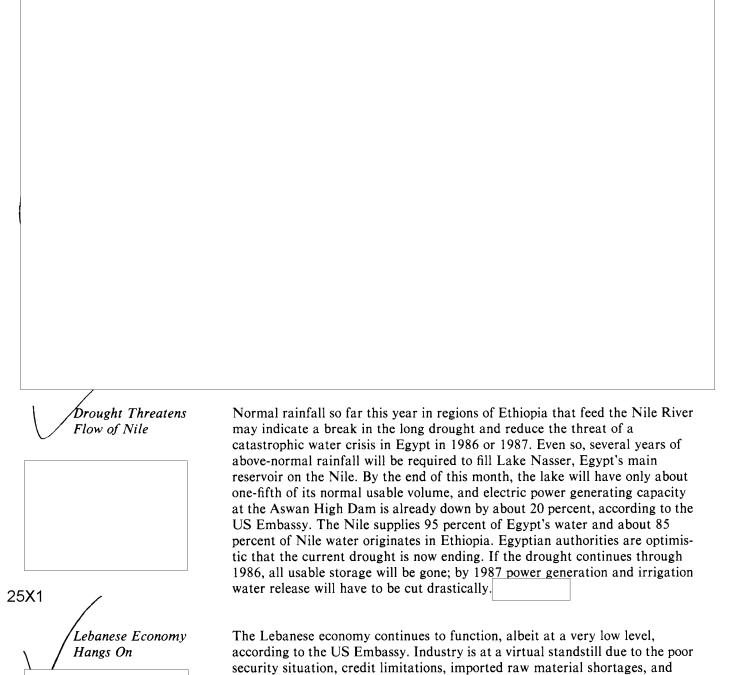
A Soviet diplomat recently told the US Embassy in Managua that the USSR is supplying roughly 80 percent of Nicaragua's oil needs over the next few years on commercial terms. He claimed that virtually all economic transactions with the Sandinistas are handled on nonconcessionary terms with only a few outright donations of wheat, medicine, and vehicles. He said Managua repaid \$7 million for commercial loans last December but admitted problems with debt service since then. Even though Moscow is trying to show Washington it is distancing itself from the Sandinistas, it probably has not changed the highly concessional economic relationship. Specific details are unavailable, but Moscow appears to be conducting most of its trade, especially oil, on a commercial basis that includes generous trade credits. Nevertheless, it almost certainly will be unable to hold the Sandinistas to a strict repayment schedule because of insufficient funds in Managua and the importance the Soviets ascribe to keeping the Nicaraguan regime afloat.

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competition from tax-free goods imported through the numerous illegal ports. Commerce has been kept alive by continued government deficit spending via its bloated payroll and through black-market trade with Syria. Although the Lebanese pound has recently stabilized at approximately 16 to the dollar, its fall from nine to the dollar at the start of the year has contributed to price hikes of approximately 70 percent. One factor reportedly helping the economy and the pound is the inflow of money—estimated at up to \$50 million a

month—to support the Palestinians and the various Lebanese militias.

25 X	1 /		
•	Tunisia Sports a Bumper Crop	The government is estimating this year's cereal harvest at 1.95 million metric tons, up a surprising 90 percent over 1984. Press reporting claims that no durum wheat imports will be necessary through early 1986 and that limited exports of barley may be possible for the first time in several years. If the estimates hold true, the bumper crop will provide badly needed relief to Tunisia's current account and budget deficits. Food imports cost an estimated \$350 million last year and food subsidies totaled \$320 million. Good weather—after several years of drought—is the primary cause of the rebound. Nevertheless, expansion of agricultural education programs and liberalization of government price controls will be necessary to sustain the turnaround, measures that the regime probably will be slow to implement.	25X1
25X	Mauritania's Copper Mine	Mauritania has begun the uphill battle to reopen its long-dormant copper mine with the help of wealthy Arab states—Algeria is a key backer—and foreign expertise, according to the US Embassy in Nouakchott. The project, however, has no assured outlets for the ore and is plagued by high extraction costs and low world prices for copper. In addition, the hasty closure in 1978 has left the mine in a poor state of repair—tailings were dumped on the most promising site for new open pit operations. The reopening, scheduled for 1987, would provide 900 badly needed jobs in the drought ravaged interior. Unless world copper demand substantially improves, reopening Mauritania's second-largest industrial project will require substantial subsidies, something the financially strapped government cannot provide. Moreover, use of outside management will require a major departure from the government's preference for heavy state control.	25 X 1
	Tanzania Proceeding With Denationalizations	At least one of the 12 sisal plantations President Nyerere promised to denationalize was recently purchased by a British firm. Further sales and subsequent private operation of the sisal estates, whose production dropped 80 percent under parastatal management, should inject much needed foreign private investment into the collapsing economy. This revenue, however, would provide only a fraction of the estimated \$200 million a year the government needs for agricultural rehabilitation. The privatization of the sisal estates, the sale of the Moproco oilseed processing concern, and recent rental housing reforms suggest the stage is being set for Nyerere's successor to take even more pragmatic steps to moderate Tanzania's unproductive socialist policies	25X 25X
25 X 1	Poor Philippine Economic Outlook	Prime Minister Virata is urging the IMF to set less stringent budget and money supply targets in its loan program for the Philippines, according to press reports. The government now projects that the economy will contract this year—it declined by 3.5 percent in the first quarter—and it is searching for ways to stimulate the economy. Virata contends that adhering to the IMF's guidelines has kept interest rates at prohibitive levels, depressing business	

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being dimmed by the expectation that export earnings for the year will decline

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hopes for an economic recovery are

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activity.

by 15 percent—in contrast to the 10-percent growth rate originally projected by the IMF. Virata's lobbying effort underscores Manila's fear that a deeper recession will further diminish the ruling party's prospects in local elections scheduled for 1986, aggravate unrest in the increasingly militant labor movement, and pave the way for further gains by the Communist insurgents in the countryside. The IMF is likely to grant Manila some leeway, but only if Manila devalues the peso and enforces long-sought reforms in the sugar and coconut industry.

25X

Increased Soviet
Aid to Vietnam

Communist

Recent press reports from Hanoi claim Soviet economic aid to Vietnam for the 1986-90 five-year plan will be more than double that for the current plan. Moscow currently provides Vietnam approximately \$1 billion in economic assistance annually. These reports add detail to the late June announcement of a new economic package for Vietnam concluded during party Secretary Le Duan's visit to Moscow. Although we believe the claimed increase is exaggerated, the Soviets probably will boost economic assistance—much of it may be earmarked for oil exploration and development in the South China Sea. Other reports suggest Soviet interest in building an oil refinery and possibly beginning offshore oil exploration in the Tonkin Gulf.

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Soviet Problems in Manufacturing Modernization

Ivestiya reports that robotization, one of the key programs in the current Soviet modernization drive, has not been cost effective and must be revised. A recent study of robot use in 52 Soviet machine and instrument manufacturing plants shows only 9 percent of these robots are used for more complex tasks such as welding, painting, and electroplating, while 72 percent perform simple functions such as loading and carrying. This reflects the fact that although the USSR now produces between 14,000 and 15,000 robots annually, more than double US production, most Soviet industrial robots are quite rudimentary and would probably be classed in the United States as manipulators. In the Soviet plants studied, 91 percent of the newly introduced robots replaced only one worker—or less—per shift. Thus, installation of such a robot saves only one annual salary, or 4,000 rubles, but costs 40,000 to 50,000 rubles each.

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Polish-Japanese Auto Venture

Nissan has recently begun negotiations with Warsaw to construct a large automobile facility in Poland. The plant, which would manufacture automobiles for both the West and East European markets, is seen as a threat by Fiat, which traditionally has had a lock on the East European auto market.

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Fiat recently signed an agreement with Warsaw to provide a \$50 million, five-year credit—one of the few Poland has been able to arrange in the West since its financial crunch in 1981—for modernization of the plant in

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25X1	southern Poland that produces the Fiat 126. A Warsaw-Nissan pact—which faces many hurdles such as financing and Poland's poor reputation for quality—would put further pressure on the major West European auto producers that already suffer from a serious overcapacity problem and need to shed more than 200,000 jobs over the next five years.	25X
Sérious Chinese Port Delays	Beijing has sent 850 troops to help ease a backlog of more than 500 ships at Dalian, Qingdao, and Shanghai. The military also will provide wharves, warehouses, and vehicles to transport and store cargo. Last month Beijing began confiscating cargoes that were not picked up on schedule. A sharp increase in trade has intensified the usual delays caused by China's antiquated and limited port facilities. China has less than 400 berths, and the 5,300 ships that called at Chinese ports during the first half of 1985 represented a 29-percent increase over the same period last year. Beijing has accelerated plans to build additional port facilities and associated infrastructure. Meanwhile, delays of three months or longer may discourage some foreign firms from	
25X1 Sino-Japanese Investment Negotiations Recessed	The latest session of the Bilateral Investment Treaty talks ended with three major issues unresolved—treatment of investment, free transfer of assets, and dispute settlement.	25X1
	Another round of talks may be scheduled for this fall. Nakasone has promised Beijing an accord by the end of this year, and the Japanese seem willing to grant concessions despite Chinese intransigence. If a Sino-Japanese treaty is signed within the next few months, China probably will expect the United States to become more interested in negotiating a similar treaty.	25X1 25X1
China's Activity in the Silver Market	China bought 20 million troy ounces of silver bullion in early July 1985—worth about US \$123 million. This purchase is larger than the total volume China traded in the first half of 1985. This purchase may be part of a broader effort by China to stockpile strategic metals, or, the Chinese may intend to sell silver on the domestic market, as part of a battle to soak up excess currency in circulation and restrain inflation. In the past, China's activity in the silver market has appeared speculative	25X
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