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Central Intelligence Agency



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DIRECTORATE OF INTELLIGENCE

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Industrial Shortages in the USSR: A Potential Threat to Gorbachev's Renovation Strategy

Summary

Shortages of industrial materials--an endemic problem in the Soviet economy--could hamper General Secretary Gorbachev's ambitious program to modernize Soviet industry, especially if an all-out effort to renovate results in production shortfalls that exacerbate shortages for key industries later in the production chain. Most shortages occur either because adverse weather conditions cause transportation tie-ups that delay deliveries, or because discontinuities between output plans set by central authorities and the capabilities of individual enterprises lead to production shortfalls which become shortages for other facilities down the line. [Redacted]

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To the extent that Gorbachev's emphasis on renovation creates additional shortages, plant managers will face an increasingly strained material supply base. Moreover, the new quality-control system of "state acceptance" introduced in January will add to the tension and uncertainty in materials supply as substandard products rejected by inspectors exacerbate shortages for downstream operations. Increasing uncertainty on the part of plant managers over the availability of key materials will tend to stifle initiative to install new equipment for which spare parts may be in short supply or for which raw material requirements may necessitate the establishment of new, untested supply links. Plant managers whose traditional attempts to cope

This memorandum was prepared by [Redacted] Office of Soviet Analysis. Comments and questions are welcome and can be directed to Chief, Economic Performance Division, [Redacted]

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with, or offset, shortages have led to "hoarding" of key materials will be torn between the desire to continue this practice to deal with deteriorating supplies and the need to adhere to the leadership's admonitions against hoarding as the drive to uncover hidden reserves and increase product quality gathers momentum. [REDACTED]

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Introduction

Shortages are endemic in the Soviet economy, often hampering the reliable supply of industrial materials to manufacturing facilities. Reducing such shortages is particularly important now to meet the goals of Gorbachev's ambitious modernization program for industry. Shortages occur for a variety of reasons, including adverse weather conditions and poor institutionalized central planning of production and distribution. The USSR State Planning Committee, Gosplan, has traditionally used a "materials balance" technique to allocate raw materials and semi-finished products, whereby potential sources of supply are set against proposed demands.¹ If ex post demand for a particular commodity exceeds the supply, either a new source of supply must be found or users simply do without the goods they need. [REDACTED]

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In this memorandum, we assess both the current nature of shortages in civilian industry and how these shortages could affect modernization plans in light of the current structure of supply distribution. We also examine how the industrial sector has tried to cope with shortages and how specific aspects of Gorbachev's program may change these efforts. [REDACTED]

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¹ Gosplan is primarily concerned with setting output targets for various industrial ministries and for working out material balances at the economy-wide level, while the 15 republic planning committees do the same thing on a regional level. [REDACTED]

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Types of Shortages and Their Consequences

Shortages generally occur in the basic materials industries that support a number of key sectors of the economy, including machine-building--the core of the General Secretary's program of modernization. Most of the shortages

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consist of fuels, other

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raw materials, electricity, and transport rolling stock.

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The drumfire of criticism in the Soviet press directed at the machine-building sector's failure to meet many of its output goals in 1986 probably reflects, among other things, the secondary effects of industrial shortages on machine-building

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production.

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Reasons for Shortages

Adverse Weather and Transportation

Weather-related shortages have a particularly severe impact on industrial activity because they are generally superimposed on endemic shortages that continually plague Soviet production facilities. The latter result mainly from the high level of tension inherent in materials supply that results from Soviet inability to plan an effective materials balance for an economy as large and complex as that of the USSR. [Redacted]

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The winter of 1984/85 in the USSR was described at the time by Soviet meteorologists as the worst in decades. Unprecedented low temperatures, high winds, and heavy snowfalls disrupted transportation, especially railroads, causing numerous production shortfalls. During the first quarter of 1985, rail deliveries to metallurgical and chemical enterprises were particularly affected.

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The 1986/87 winter weather was even more severe than that of 1984/85, and Soviet industry has been plagued again this year by weather-related shortages. Indeed, poor production figures for industry overall in early 1987 and Soviet press reporting of rail



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bottlenecks, production stoppages, and frozen cargo suggest that little progress has been made toward overcoming the disruptions associated with worse-than-expected winter weather.

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Central Planning and Shortages

Many shortages of industrial materials result from the tension between central planners looking to maximize production plans and enterprise managers whose interests are best served by minimizing output plans.

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the conflict between centrally set plans and enterprise production capabilities often leads to unrealistic output goals being imposed on some enterprises while others receive targets well below their capacity to fulfill. This results in shortfalls in production by the former and excess output by the latter, which create discontinuities in the flow of industrial materials and, in turn, lead to bottlenecks and shortages for other industrial facilities involved in later stages of processing.

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As Soviet industry has developed, balancing the flow of materials has become increasingly complex and more dependent on the closely coordinated efforts of a myriad of producing enterprises. According to Soviet economists, Five-Year Plans attempt to coordinate the production and distribution of roughly

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24 million products. The complexity of planning the economic relationships that arise on such a large scale has turned the national planning process into a "Rube Goldberg" archetype of bureaucratic "buck-passing" that defies efficient administration (see figure 2).² Consequently, more and more time and resources must be devoted to the planning process itself and to devising ultimately cumbersome and wasteful efforts to overcome the nearly ubiquitous problem of shortages. [redacted]

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Coping with Shortages: Efforts to Offset Their Effects

At the Enterprise . . .

Charged with meeting monthly, quarterly, and annual plans, individual enterprises have adopted unofficial methods of offsetting chronic supply problems (hoarding, for example). [redacted]

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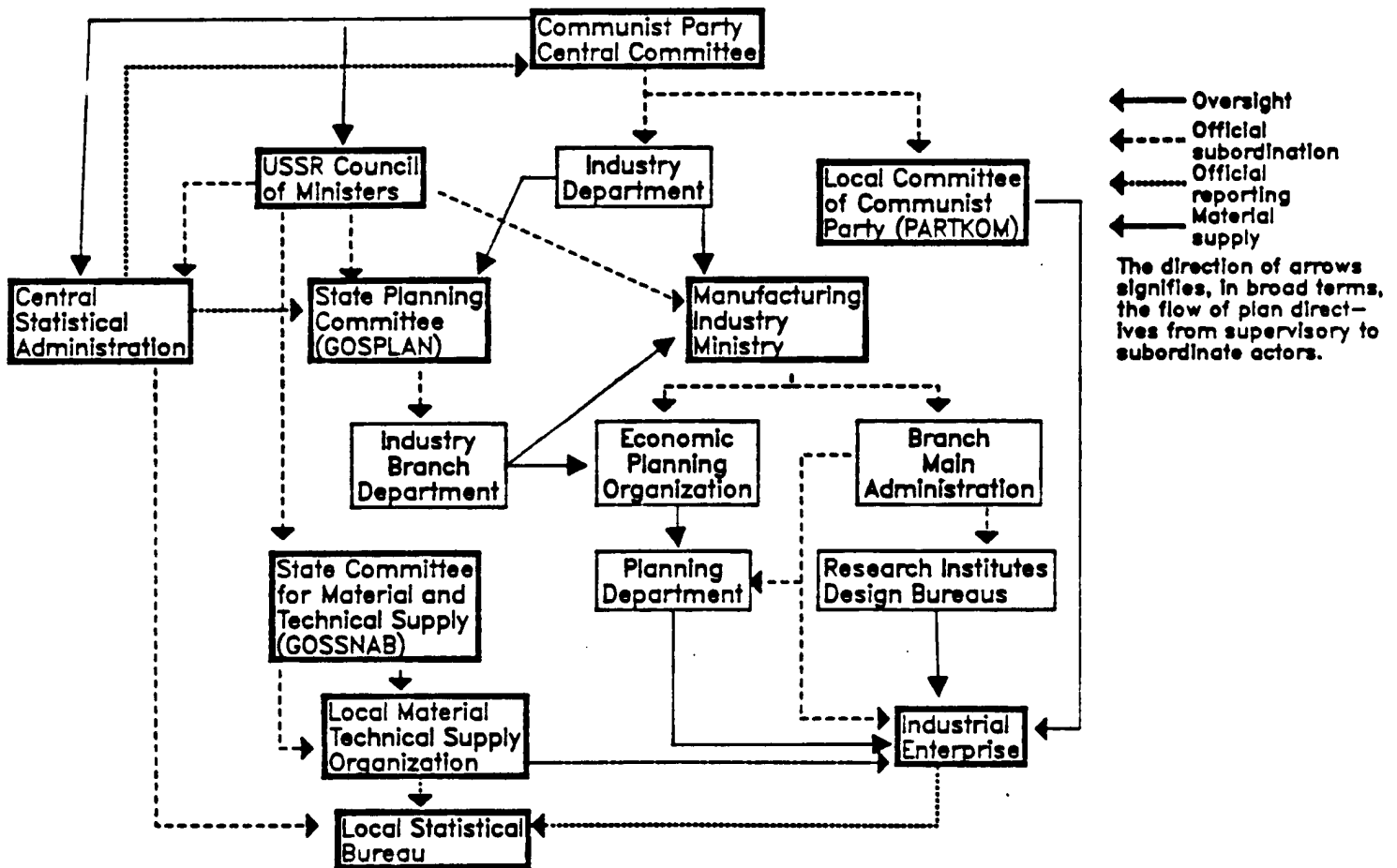
Participants must be familiar with a variety of techniques to make a plan acceptable to the political leadership, Gosplan, and their own ministerial administrators. They present the ministry's plans in a form reflecting all "bureaucratically

² This problem is being discussed more openly in Soviet economic circles, the likely result of Gorbachev's "openness" campaign. An article in the February 1987 issue of Novyy Mir notes the "sheer impossibility" of planning in such a complex system, and a recent lecturer in Leningrad noted that "in order to correctly balance a central plan" (for a single point in time) for 24 million products produced at 150,000 enterprises, "the entire computing power of the Soviet Union would be required for 11-1/2 years." [redacted]

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Figure 2

Practical Operation of the Soviet Planning System^a

^a This view of the Soviet planning system is intended to highlight functional operation, it is not an organizational hierarchy.

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mandated but not necessarily relevant plan indices or control figures." [redacted]

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Members of shadow Gosplans range from senior scientists or chief project engineers to heads of departments in research institutes or design bureaus. Their unofficial role is essentially a reactive one; they incorporate into plans hidden features which make monthly and annual plans attainable for the industrial ministry. An individual enterprise, largely through the influence of a shadow Gosplan, may come to rely excessively on "hoarded" production reserves (expressly forbidden by Gosplan) to fulfill or overfulfill its production plans. This procedure creates distortions in the already complex system of planning parameters and compounds the problem of shortages. The common practice of "storming," or massive end-of-period efforts to increase output to make up for prior lags, both encourages and is encouraged by hoarding. Stockpiling reserves of industrial materials can lessen the overall impact of a temporary shortage on a particular facility, but generally results in wasted resources and a disregard for quality control. [redacted]

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. . . and from Above

Gorbachev has publicly recognized the inefficiency inherent in a system that attempts to plan the production and distribution of millions of products and has proposed that managers of some industrial enterprises have more autonomy over planning their

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production and purchasing their material supplies. In addition, new "incentives" are being introduced to enable workers to "successfully seek out all reserves and mobilize them for plan fulfillment without fear of raising production targets for subsequent years." For example, the 1987 Plan was designed with an eye to adhering to the existing annual output targets of the Five-Year Plan for 1986-90. Thus, according to new policy guidelines, reserves should be used to overfulfill the planned level of production, and plant managers should not be expected to meet new, higher production goals in each successive year. Such "incentives" are not new to Soviet industry, but they have been given more emphasis under Gorbachev. [REDACTED]

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Although Gosplan and Gosstab (the State Committee for Material and Technical Supply) may succeed initially in reducing the level of hoarded materials, enterprise managers will not eliminate excessive stockpiles--by normal market economy criteria--which they view as a cushion against unforeseen shortages. Moreover, as long as a set of detailed national preferences (reflected in five-year and annual plans) is imposed on producers, and prices and wages are set and changed at the discretion of central planners, the managerial initiative Gorbachev seeks to develop--despite some likely early success--is likely to succumb eventually to the waste and the inefficiency engendered by conflicting interests of enterprise managers and central planners. Enterprise managers with increased autonomy,

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for example, will place new and perhaps excessive demands on local suppliers for raw materials and semifinished goods. Suppliers, on the other hand, will still be functioning under the direct control of central authorities and may be unable to reconcile the demands of their customers with the directives and resource allocations of their masters. As a result, both producers and suppliers may become disillusioned and may once again resort to the very methods that have led to waste, fraud, and mismanagement for years. [REDACTED]

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Shortages and Quality Control

A new state quality-control system introduced in January at 1,500 of the country's enterprises in 28 different ministries could aggravate shortages.³ Preliminary reports indicate that the new system was responsible for rejection of 10 to 20 percent of the industrial goods inspected, and it follows that downstream operations now face a new source of shortages of needed materials. Furthermore, such affected enterprises will be burdened, at least in the near-term, with continued pressures from central planners to maintain output while simultaneously attempting to satisfy the standards of quality-control

³ The new system--gospriyemka--is loosely modeled after the long-established quality-control system in the defense industry. Inspectors can reject the output of an enterprise if it does not meet quality standards. Rejected goods cannot be counted in plant output statistics until they are brought up to standard. [REDACTED]

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inspectors. Improving quality while fulfilling planned increases in production are not readily compatible objectives. Although other factors--including severe weather--also held back industrial performance early in 1987, the demands of the new system could continue to affect industrial output at a time when Gorbachev's program needs extensive support. [redacted]

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Potential Impact on Gorbachev's Program: Looking Ahead

Gorbachev's plan to accelerate renovation of existing production facilities could exacerbate the tension already present in planned material balances. Renovation normally requires shutting down production lines to replace old equipment, which, in turn, is likely to jeopardize production plans.⁴ Since the capacity for renovation is linked to dependable deliveries of supplies (which are themselves reliant on healthy production in upstream operations), a "catch-22" could develop which might foster further managerial resistance to industrial modernization. Current production will necessarily decrease during renovation, raising the risk of shortages at downstream plants. But without renovation, substantial improvements in the quality of production, or in the efficiency of the production process, are unlikely. If renovation projects are initiated at

⁴ To help offset the effect of renovation on immediate production plans, some industrial enterprises have increased the number of shifts on production lines not temporarily out of commission. The Central Statistical Administration plan fulfillment report for first quarter 1987 indicated the shift coefficient of work at enterprises that had instituted multi-shifts had "increased somewhat." [redacted]

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many basic industrial facilities simultaneously without regard to the potential impact on their production capacity, materials shortages could increase, affecting downstream operations that could reverberate throughout industry. [Redacted]

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The renovation strategy imposes especially heavy burdens on industries such as steel, chemicals, and construction materials, not only to maintain and improve deliveries of existing products to sectors such as machine-building, agriculture, and retail trade, but also to develop a wider variety of new and better products that likely will require an even more reliable supply of material inputs. For example, the expanded "chemicalization" of the economy, particularly in the areas of agriculture and petrochemicals, places rigid demands on the chemical industry to expand production of advanced materials. The tasks of developing and producing materials such as engineering plastics requires inputs of specialized materials, supplies of which in the past have frequently been erratic and unreliable. Moreover, competition from military users for advanced chemical products is extensive. [Redacted]

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Moreover, Gorbachev's call for plant managers to become more innovative in their approach to production will likely fall on deaf ears as long as the present system of material balances and shadow Gosplans remains essentially unchanged. For the plant manager, familiarity with both the technical characteristics of material already used as well as the relative reliability of delivery schedules keep supply difficulties to a minimum. Uncertainty over the working characteristics of new materials or processes and the availability of supplies could tend to discourage innovation. If innovative plant managers must depend increasingly on new supply linkages with unfamiliar production facilities (which may be suffering from shortages themselves), innovation is likely to proceed at a snail's pace. Just as the pressure to renovate could result in the shutdown of a facility and aggravate shortages, pressure for innovation is likely to be met with resistance among managers who fear facing even greater supply problems. [REDACTED]

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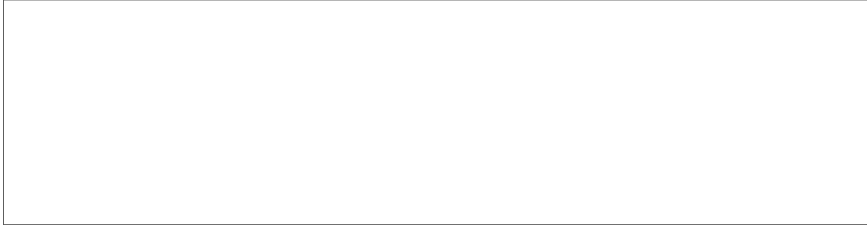
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