FASTC-ID(RS)T-0866-92

FOREIGN AEROSPACE SCIENCE AND TECHNOLOGY CENTER

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by

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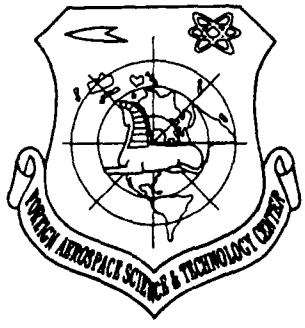

HUMAN TRANSLATION

FASTC-ID(RS)T-0866-92 16 July 1993

MICROFICHE NR: 93C000457

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English pages: 10

Source: Unknown; pp. 2-4

Country of origin: China
Translated by: SCITRAN
F33657-84-D-0165
Requester: FASTC/TANM/Parry
Approved for public release; Distribution unlimited.

PREPARED BY:

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he Weapon Research Contract System in China

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bstract The weapon research contract system in China is ntroduced. Suggestions with regard to better improve the current ystem were also made.

Ever since the New China was established, the research and levelopment of weapon systems slowly transformed from imitation :o indigenous and independent development. The major weapon systems currently used by PLA, from highly advanced to regular weapon systems such as guided missiles, aircraft, warships, and :anks, are basically all developed and manufactured in China, which should be regarded as a major achievement of the nodernization of Chinese defense power. Improving the organization and management of weapon research system not only expedite the process of weapon research, it also helps in escalating the level of defense technology. The contract system in weapon research is one of the most important improvement measures in defense technology after the policy of opening was set by the government. Positive improvements in the coordination of industry (research and development) and military (actual user), diminishing of possible conflicts between needs and reality, and efficiency of research funding and quality of weapon research is already evident.

The necessity of weapon research contract system

The concept that weapon is a specialized merchandise has een slowly understood and accepted by most people. During the eriod of Korean War, the weapons manufactured by industry were iven to the troops while the Department of Finance paid the ndustry directly. Along with the development of civil economy, a erification and auditing system was slowly established between he military and industry and the military merchandise was orrectly priced and paid for by the military branch. However, eapon research has been following the same system where the ilitary branch provided the weapon verification, experience with ew weapon systems and tactical target, and carried out design nd test; while the weapon research funding was directly given to efense technology industry, which was also given the esponsibility of organizing and managing the research process. ecause of the potential differences between weapon requirements et by the military branch and the actual industrial and inancial capability, some of the funding and time was wasted, hich also explained the low overall efficiency in defense echnology. Therefore, introduction of the planned merchandise conomy into the realm of weapon research and combination of dministration, economy, and legal measures have become a major ask for improving management of weapon research. Since 1987, eapon research contract system has been widely applied. Weapon ystem regulation and research funding was directly appropriated o the user of the system. The user then negotiated contracts

th industry or institute (defense technology research stitute, higher education institute, or private corporations). der the condition of coordination and fairness, the sponsibility, right, and profit are clearly defined and the search funding was effectively appropriated.

. The characteristics of weapon research contract system in ina

Specific implementable procedures of weapon research ntract system were developed after a few years of experience. rrently, the research contracts between military user and fense industry can be divided into case research period, gineering research period, and design and manufacturing period. other words, the contracts were signed from the initiation and nalization of research topic to the completion of design. For search topics with complex technology, long-term research riod, and complicated coordination, the contracts will be vided into principle study, preliminary research, and full- ale research and manufacturing contracts. Generally, the user ll sign the contract with a general contractor while the neral contractor will be responsible for signing the contracts th sub-contractors. As a result, a multi-layered contract net formed. The major characteristics of a research contract are:

1. The guiding role of weapon users in research and velopment of weapon systems is emphasized

Military branch is the direct user of weapon systems. Based

the national security requirement and possible future combat ssions, the research goal of weapon systems is determined. :er the weapon research contract system is implemented, more sponsibility is placed on the end user who will be the first oup to propose the reasonable tactical technology indicator to used as the basis for weapon research and negotiation of ntract. Based on the concept of weapon development planning and search resources, the research topics are prioritized and search emphasis and direction is established. The limited sources will be used on the most urgent items so that the oblem of carrying out research items without considering nding condition is avoided.

2. Combination of instructional planning and economical ans

A certain competition mechanism is introduced after plementing the research contract system. However, the mpetition is under the guidance of relevant national policies. e weapon research and development planning guidelines, which n not be altered or canceled by research institutes, are obeyed d the tactical technology indicators and overall research plan, ich lists the relevant regulations of weapon research and velopment, are followed. Using economic measures, the contract early defines the profit and bonus of the research group, operly appropriates the surbodination and sharing of technical hievement, and regulates the punishment or fine for any party olating the terms in the contract. Therefore, through proper

lection of research group and reasonable appropriation and ving of funding, the research mission can be accomplished with arantee in quality and quantity.

3. Close coordination between user and industry

No matter it is the contract bidding process or the gotiating or contract fulfillment process, the mutual support, ordination, and sharing of responsibility between the miliary anch and defense industry is of utmost importance and only a ose relationship between the two parties could guarantee the complishment of the research mission. When argument arises ring test or verification of the product, the mutual derstanding and support is especially crucial. The user group ould continuously trace and understand the research velopment, unbiasly verified the research quality (especially e technical results), strongly support the mutual independence the administration commanding and design systems, and provide mely advises and suggestions. The defense industry should plement its military merchandise management mechanism and ministration experience to establish the design, administration mmanding, and quality assurance systems for various weapon gulations, and progressively adopt the relevant coping measures th respect to weapon research.

I. Comparison with weapon research contract system of the stern nations

The weapon research contract system has been implemented in

he Western nations for a long time. During the first World War, he US armed forces started the contract system which has become, hough many years of development, a ry complete system. resently, weapon research and military merchandise purchasing ontract system is implemented in nations such as the United tates, Great Britain, France, and Germany. Contract management enters are set up in the Department of Defense and all the ilitary branches of the United States and a series of egulations regarding legal requirement, bidding procedure, erification, and contract establishment are clearly defined. The uiding concept of the contract system of the US armed forces is o use the ultimate goal of profit of private business as a timulus to let military branches, the only representatives of he government, actively organize the corporation and competition etween the industries to accomplish the mission of fulfilling he contract, the need of developing weapon systems, and reducing he possible loss as a result of contract problems. When the eapon research contract is negotiated, the purchase, training, logistics requirement, and maintenance are also negotiated so hat the total management cost can be minimized. The weapon esearch contracts of the US armed forces can be roughly divided nto two categories: fixed price contract and cost compensation ontract. Fixed price contract is mainly used in quantity urchasing of military merchandise. Because the price is fixed, he appropriation ratio; the distribution of the difference etween the actual cost and projected cost, can be determined

:forehand. As a result, the manufacturer is encouraged to reduce
ıe manufacturing cost. However, because of the risk involved in
:search, certain costs could not be accurately predicted and a
ifferent contract, cost compensation contract, is needed. The
·ice of a cost compensation contract is determined by the
easonable profit and the actual cost. Based on the calculated
ost, the fixed bonus (and/or evaluated bonus) is added to
ncourage cost management. After long-term development, research
nd manufacturing of major weapon systems of the US armed forces
s already monopolized by certain industries and the competition
an be fierce sometimes. Nevertheless, the overall stability has
chieved. The US armed forces weapon research contracts are
lassified and categorized. Research items involving major
echnical breakthrough or large sum of funding (total research
unding exceeding 200 million dollars and total purchasing
unding exceeding 1 billion dollars) are classified as important
ational defense purchasing plan which has to be verified by the
ecretary of Defense. Because People's Republic of China is a
ocialist country, weapon research contract system is established
ased on "People's Republic of China Technical Contract Code" and
elevant codes or administrative orders. The major parties of
eapon research contract are the social organizations and armed
orces, both sharing the raw material and information with one
nother. This is a fundamental difference between a socialist and
capitalist nation. Therefore, the contract system of the
estern nations can not be blindly imitated even though some

ractical management techniques can
e adopted.

V. Future Development of Weapon Research Contract System in China

The weapon research contract system will have to keep improving. Total dedication to higher levels of defense technology is still an important warranty to the success of research contract system. The major future developments are:

1. Establish the relevant regulations and codes regarding cooperation of military branches and industries. Maintain the relative stability of policies. Properly manage the relationship between needs and research based on the principles of supply and demand so that 1) the user group and research group both have a regulation to follow, 2) the common business can be conducted, and 3) the conflicts can be resolved.

2. Keep investigating on the effective format of the contract which complies with the traditional philosophy and the new method of establishing a contract. Specific problem areas include the research funding for solving problems left behind after the product is finalized and the research grant is allotted. Additional funding is always required to completely conclude the research project, resulting in increase in total research cost. At the same time, attention should be paid to the effect of consumer price index on the research cost. Adequately improving the contract management department, especially the

ality of contract managers, the appropriation of funding, and rification of progress and quality will help in resolving the oblem of prolonged research cycles.

3. In further promoting the contract system, it is worth nsidering the importance of removing the blockades between partments and businesses and enlarging and encouraging mpetition. Ever since the defense technology industry in China s re-structured, many medium to large defense industries are icing the difficult task of "civilization" and the fulfillment research is heavily dependent on the management of the ntractors. Therefore, one the one hand the research and nufacturing capability of national defense technology should be eserved and the professionalism, stability, and continuity of search work should be cautioned to avoid unnecessary or blind mpetition, on the other hand the technological achievement of ny civil industries should be adopted and utilized.

4. An important requirement of weapon research contract stem is the development of total-life, total-system management weapon systems by the user group. Total consideration should given to technology development, prototype manufacturing, uipment purchasing, training, and logistics operation and intenance operation. Only when the quantity and purchasing ogress are clearly defined can the requirement of research ogress specified in the contract and the transferring of search product to manufacturing preparation be solidly based d the military economy efficiency be elevated.

5. One of the necessary requirements for smoothly carrying it weapon research contract system is the accounting/auditing /st based on national finance codes. The raw finance data nou be properly established by the research group and erif cation and monitoring of flow of research funding should be aref lly executed by relevant departments to avoid possible ffec of widening up the range of research purchases and sca ting of cost.