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# Shanghai Volkswagen

On November 9, 1994, Peter Loew, the Deputy Managing Director of Shanghai Volkswagen (SVW), was to address the Santana Localization Community for the German-Chinese joint venture. This was a select group of Chinese parts manufacturers parts for the Santana, the Volkswagen marque manufactured in China. This was an elite group: entry into the community was restricted and required each of the Chinese parts manufacturers that made up its membership to meet specific quality standards established by SVW.

Paramount on Loew's mind was the Chinese government's refocused efforts to develop a home-grown passenger car industry. On February 19, 1994, a new policy for the Chinese automotive industry which had been on the drawing table for years was outlined by an announcement of the State Planning Commission. The strategy was designed to:

> [enable] the automotive industry of our country to develop into a pillar industry . . . within the shortest time possible: effecting a change wherein capital investment is consolidated, production scale increased, technology upgraded, new product development capability enhanced, product quality improved, technical level of equipment updated, and industrial structure reorganized for the benefit of the auto industry. Through implementation of this policy, our automotive industry will be on firm foundations by the end of this century. Further, two five-year plans thereafter, by 2010, the automotive industry will become one of the four pillar [1]industries in the national economy, and will fuel the development of related industries

(See **Exhibit 1** for relevant articles.)

Loew recalled the experiences of his predecessor, Dr. Martin Posth, the first Deputy Managing Director of SVW and now Chairman and President, Volkswagen Asia-Pacific Ltd. Dr. Posth, a visionary, spearheaded VW's drive into the automarket and the development of a local contents network. In 1986, few people had thought it would be possible to produce a western-quality automobile in China other than through the assembly of kits; China was not known for its ability to manufacture complex products with dependable quality. Moreover, even the considerable

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[1] Pillar industries refers to an industrial policy by which the Chinese government identified several industries as being critical to national economic development. As such, foreign investment in pillar industries was restricted, with no wholly-owned foreign ventures permitted. The other three were mechanical -electronics, building materials and petrochemicals.

*Research Associate Diane Long prepared this case under the supervision of Professor David Upton as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.*

advantages of low cost Chinese labor did not translate into an inexpensive Chinese car if components were to be sourced from foreign suppliers: most of the expense would be in the components exacerbated by high import tariffs of 25-40%.

Thus there was considerable motivation to develop domestic capabilities in automotive parts production—even though few quality manufacturers existed in 1986. Posth had had to build these new capabilities from scratch, to develop a car with high local parts content—a car that was truly "Made in China." At the same time, the Chinese market for automobiles was developing rapidly. The new buyers were more savvy and willing to spend the money. SVW had only one chance to create their reputation in the market. The Chinese had long memories: starting with the wrong model would have been disastrous and might have lost the fledgling market forever. The challenge facing SVW's management was to manufacture a quality product in a nation that was only beginning t adopt western quality practices.

Volkswagen AG (VW AG) , as part of the joint venture agreement, had transferred the entire production line for the Santana passenger car from Brazil to Shanghai. The production line was already tested and life would have been easy if the parts could have been sourced locally, requiring SVW simply to assemble the car on a proven production line. Unfortunately, such quality suppliers were hard to find. Some said impossible. An automobile industry did exist in China as there were several Chinese sedans, military vehicles and transport vehicle factories scattered throughout China. Thus locating parts manufacturers was not the issue. The primary problem was the development of suppliers who could make components to Western standards. The challenge of developing supplier capabilities, without actually owning or controlling them, seemed insurmountable at times. It was made more difficult by the fact that few Chinese manufacturers saw any reason to change the way they had always done things. The VW's technical staff found it difficult to communicate VW's concept of quality to the Chinese autoparts manufacturers.

Posth began with a small group of suppliers who met frequently with each other and whose membership grew slowly as new suppliers met the exacting new quality standards. At the same time, VW AG worked with their European parts manufacturers to encourage their entry into China. VW's technical staff supported them by assisting with the identification of possible Chinese partners for the various parts to be manufactured. By 1994, SVW had built a cadre of suppliers both domestic and foreign invested enterprises, able to deliver by 1995 88% of the value of the automobile from China based factories. SVW's Santana passenger car had also, by this time, established a 47% market share. Everywhere one looked in Shanghai, it seemed, there was a SVW Santana. By 1995, the Shanghai joint venture planned to produce 160,000 cars. SVW had come a long way from the 1,733 complete knockdown (CKD) cars assembled from imported kits in 1985.

For SVW the challenges posed by the new Government automotive policy were hauntingly similar to those faced by Posth in 1986. In fact, Posth felt that as one of the first foreign invested automotive enterprises in China they had actually contributed to the improved standards the market currently enjoyed. SVW had proved that the Chinese automotive industry could compete with foreign suppliers by continuously improving. In particular, the four clauses of Article 31 pertaining specifically to automotive joint ventures stressed areas SVW had been working on for years. These stated peremptorily:

1. Enterprises shall establish their own research and development infrastructure and be capable of developing new generation products in China.

2. Such enterprises shall demonstrate an ability to make "world class" high-technology products;

3. Such enterprises must balance their foreign exchange accounts primarily by exporting their own products;

4. In selecting components, with all other things equal, local parts shall be given preference.

In managing the Shanghai auto venture towards the stated goals of the Chinese vehicle policy, SVW paid particular attention to items (1) and (4) of Article 31, since the development of local capabilities was incredibly important to their ability to compete in the market and had proved the most troublesome feature of SVW's short history.

SVW was under considerable pressure to source even more components from within China itself. A number of components were still imported because local suppliers could not manufacture any of these components to the requisite quality standards. These included carburetors and plastic trim, for example. At the Santana Localization Community meeting at which Loew was to speak, Loew would outline SVW's strategic response to Article 31.

## The Chinese Automobile Industry

The Chinese auto industry managers had pressed for the rapid development of a local Chinese automobile industry in the Sixth and Seventh Five-Year-plan of 1980 and 1985 respectively. They saw the automobile industry as a pillar industry which would spawn the development of an integrated industrial manufacturing network so important for China's economic progress. The theory that a country which could forge, cast, mold, and machine could manufacture any durable consumer product. Throughout the 1980's several joint ventures with foreign automobile firms for the manufacture and assembly of passenger cars were signed (Figure A lists the joint ventures with brands of cars manufactured and 1994 output).

**Figure A** Chinese Vehicle Assembly Joint Ventures

| Joint Venture | Models Produced | 1994 Output |
|---|---|---|
| SVW | VW Santana | 115,326 |
| Beijing Jeep/Chrysler | Cherokee | 14,703 |
| Tianjin Auto Works/Daihatsu | Charade | 58,500 |
| First Auto Works (FAW), Changchun | Audi 100 | 20,000 |
| | Jetta | 8,219 |
| Guangzhou Auto/Peugeot | Peugeot 505 | 5,205 |
| Sheniong Motor Co. | Citroen ZX/Volcano | 8,010 |
| Changan/Suzuki | Alto | 17,175 |
| Guizhou/Subaru | Skylark | 461 |

## Growth of the Chinese Market

By the 1990s, the Chinese car market was expanding rapidly. In 1993, total auto and truck sales in China increased by 9% with 1.2 million new vehicles registered in China that year. In 1994 Chinese car production reached 247,599 cars or 19% of this market. Market analysis further suggested that by the year 2000, sales would total three million new passenger vehicles annually. In 1994, the Santana held 47% of China's domestic auto market; when sales of the Jetta and VW AG partnerships accounted for 58% of all locally-produced cars sold in China. In 1994, the Santana was

priced at U.S. $20,000 with imported vehicles costing many times more due to government duties of up to 200% on imported luxury goods. [2]

Private sales and distribution of cars in China in 1994 was almost non-existent, though the liberalization of the automotive retail market was heralded by the Government industry policy paper released in that year. Distribution centers were controlled by the Ministry of Heavy Industry under the aegis of the Bureau of Automobiles, the government board empowered to oversee the automobile industry. Beginning in 1993, there had been a slow emergence of dealer showrooms though it was still not uncommon for a private buyer to travel the breath of China to purchase a car directly from the factory.[3] In 1994, the Chinese government, in its many forms, still purchased 96% of automobiles sold (see **Exhibit 2** for Chinese auto order-distribution-sales flow chart).[4]

## Disappointment in Beijing

Prior to the formation of SVW, China's experience in joint venture passenger car assembly had been less than impressive. Beijing Jeep, the first Chinese auto joint venture signed in 1983 between Beijing Auto Works and the AMC Jeep Corporation, had tested the early days of foreign-Chinese joint venture activities. Conflict arose from a fundamental disagreement over the purpose of the joint venture: for the Chinese, the joint venture was viewed as a source of foreign technology for its own industry; for AMC Jeep, the project was viewed as a means to access a market of 1.2 billion consumers. Thus, at cross purposes, with the Chinese partner seeking to increase its manufacturing know-how and with AMC plotting how it might sell imported Jeeps, the venture went bankrupt in 1986. If not for special reprieves granted by the Chinese government, Beijing Jeep would have disappeared into the voluminous annals of Chinese history.[5]

## History of Shanghai Volkswagen

Shanghai Volkswagen was built on more solid mutual foundations than the Jeep venture. In October 1984, a joint venture agreement was signed between VW AG and a consortium of Chinese partners led by the Shanghai Automotive Industrial Corporation (SAIC), the Bank of China, and the Chinese National Automotive Industrial Corporation (CNAIC). The agreement, valued at RMB 1 billion[6], established a 25-year Sino-German partnership with 50% equity provided by VW AG, 25% by SAIC, 15% by the Bank of China, and 10% by CNAIC. Initial equity from the partnership was used to finance the renovation of production facilities, to import production lines from Brazil, and to import the Santana CKD's.

The new joint venture was christened Shanghai Volkswagen. Over the previous five year period, the Chinese consortium had negotiated with more than eight international automobile manufacturers before opting for a partnership with SVW's German parent. As the second automobile joint venture in China, the joint venture planned to manufacture automobiles and engines and was granted special tax relief under Chinese guidelines for advanced technology partnerships: a

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[2] The list price quoted is for a factory standard Santana. Luxury models, which constituted 30% of Santanas sold, differed from the base model in wheel base, car width, additional cushioning and head rest, and radio with cassette player. Retail price of the luxury Santana was approximately 20% higher than standard. The U.S. retail price of a Passat and an Audi 80, autos of comparable makes, is $22,000 and $23,000 respectively. Tariffs were based on a sliding scale dependent upon engine displacement and choice fuel consumed.

[3] "Car shortage makes popular VW worth trip in China," *Chicago Tribune*, January 23, 1994

[4] Government purchasers included government organization and institutions, civic enterprise, state owned factories and township enterprises.

[5] See Jim Mann, *Beijing Jeep*.

[6] In 1984, the exchange rate was approximately 5RMB to U.S.$1. In 1995, the exchange rate was approximately 8.3 RMB to U.S. $1.

standard two-year tax holiday and a special six-year reduced tax rate exclusive to SVW in exchange for promised technology transfer.

## Governance

The senior management responsibilities were divided between a Chinese Managing Director and a VW appointed ex-patriate Deputy Managing Director (see **Exhibit 3** for 1994 organization chart). The remainder of the board reflected the equity contributions of the Chinese and German partners.

## Balancing Foreign Exchange

The joint venture was cinched when VW AG agreed to a type of counter trade by which the new enterprise could balance its foreign exchange accounts.[7] In the contract, VW AG agreed to purchase engines produced in Shanghai to be used in cars manufactured in Europe. The earnings generated from such exports would support the use of foreign currency by SVW for importing the kits and later the foreign components used for assembly in China. For VW AG, penetrating the Chinese car market fit well into VW AG's Asian strategy. With a population of 1.2 billion in 1994, the prospect of outfitting even a fraction of the Chinese population with VW passenger cars was seductive. In 1990, VW AG signed its second joint venture in China with First Automobile Works (FAW) in Changchun. The two Chinese plants, along with a third located in Taipei, formed the vertices of "the Chinese triangle;" three production facilities for VW AG from which it would distribute and sell cars to the Chinese market.[8]

## From Tractors to Autos

The SVW plant was located one hour outside the city of Shanghai in Anting, Jiading County. Its production facility was originally the Shanghai Tractor Factory plant, and had been converted for automobile manufacture. The joint venture began production in September, 1985 with the assembly of CKD Santanas. The Santana was chosen to accommodate two aspects of the Chinese setting: first, market research had indicated a strong Chinese preference for sedans (rather than subcompacts like the VW Golf); and second, the sturdy construction of the Santana could withstand the substantial challenges presented by China's sporadically maintained roads. SVW's operations strategy called for the gradual phase-in of car and engine component production; the joint venture management and work force would first gain experience by assembling imported kits of Santanas before investing in the labor intensive upgrade of the local component suppliers. In 1985, 1,733 Santanas had been produced in the Anting factory (see **Exhibit 4** for Sales and Production Figures and Balance Sheet). Production plans called for the manufacture of 20,000 Santanas by 1989 and 100,000 engines by 1990.

## Expansion in 1991

In 1991, SVW announced plans to inject $464 million to expand production capacity. The factory of the old Shanghai SAIC which manufactured the classic Shanghai Sedan was bought and renovated for the production of the less austere Santana. The reconstructed Shanghai Sedan plant, when fully operational, was expected to produce 180,000 cars per year, though production would be ramped up very gradually to accommodate a Chinese workforce still in development stages. Renovation was to be completed by 1995. In 1994, the original factory manufactured 115,326 automobiles and 120,000 engines.

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[7] "Buy-back deal clinches project," *Financial Times*, October 29, 1985.
[8] "Volkswaagen Launches Taiwan venture," *Financial Times*, July 11, 1991.

China was, to the surprise of many Westerners, less than eager to abandon thousands of years of custom and tradition in favor of Western substitutes and required its joint ventures to adapt to local customs. Powerful joint venture partners with the ability to slice through Gordion knots of bureaucracy were critical for western firms. However, such relationships meant concessions when national political policies clashed with commercial affairs. Aggregate production planning was an unusually political, but cooperative affair with targets brokered between government officials responsible for the auto industry and SVW management. In 1989, SVW was ordered by the central government to produce 15,687 cars, even though the planning committee was set to produce 20,000 units. Production planning notwithstanding, SVW shut down for 39 days. According to Loew, the objective was "to produce at a quantity which provided the best quality under the prevailing conditions."

## Building a Chinese Car

**A philosophy for the Santana** When the venture began the German and Chinese management saw no reason why a "quality" car should not, ultimately, be produced as easily in China as anywhere else. Posth categorized manufacturing into three key elements:

- suppliers
- workforce
- production system

With a production system for the Santana provided by SVW 's German parent, it was the team's responsibility to nurture an effective parts supply network and committed workforce. Theoretically speaking the Germans brought the technology and modern management know-how. The Chinese contributed land, factory buildings and the labor force. However, in addition they brought an understanding of their society and recommendations on how to be most efficient in that environment. This became an important tool when the emphasis on the parts supply network gained an added measure of urgency when a time table for the growth in percentage of localized components was written into the joint venture contract (see **Exhibit 5**).

## Chinese Suppliers

Building a Chinese component supplier network proved to be the most onerous task of Wang's tenure as the first Managing Director. As Wang related:

> You have to understand, the technical standards of Chinese automobile component suppliers in 1986 were nearly 30 years behind component manufacturers of Europe, Japan, and the United States. For SVW, measures of technical excellence were defined by standards dictated by its European parent, Volkswagen AG. Furthermore, Chinese automotive suppliers in my time manufactured parts for trucks, not cars. We needed a fundamental shift, not only in parts design (as cars are a little different from trucks) but also in the technology. In the beginning, there wasn't a single local parts supplier who could produce a part we could put in the Santana.

Beyond technology and know-how, there was the question of finance. Improving the quality of components from domestic parts manufacturers required money in order to purchase foreign knowledge and technology as well as train their employees in new methods of production. This was management's challenge—how to support the development of the system while not actually running it themselves.

Wang articulated his plan for a Chinese parts supply network based upon a harshly realistic assessment of the industry. He identified areas that would present the greatest difficulties, and those that would be less troublesome. The plastics industry in China, for example, was still in its infancy in 1986—to source trims for the Santana locally would have required a large investment by SVW, both financially and technologically, in order to develop plastics manufacturing capabilities in China. This endeavor would prove extremely difficult.

**Two prong approach** Based on this analysis, both the German and Chinese teams went to work bringing their special expertise to the problem. Wang produced a catalogue of parts which could realistically be sourced within China. Once compiled, SVW published the supply register nationwide seeking tender offers from domestic firms seeking supply contracts with SVW. Initially, only a few firms volunteered. For the few suppliers who submitted tenders, selection was based upon criteria devised by German experts. Spot checks of prospective suppliers were conducted to evaluate their manufacturing capabilities; suppliers were scored on the technical level of their workforce and equipment, and the quality of the products currently in production. In addition, to expedite the localization process, Wang pursued vendors whose products paralleled those required by SVW. For example, parts manufacturers from the aeronautical industry were avidly sought and recruited as possible suppliers of car components.

VW AG worked simultaneously contacting their European suppliers, trying to get them interested in coming to China to manufacture their parts. SVW management would present the lists of possible Chinese partners to the Western companies and facilitate the introductions process between the Chinese and European companies. VW AG worked proactively to bring the know how and technology to China via many channels and building relationships.

## Matchmaking and Training

In a gradual process, SVW first encouraged Chinese suppliers to forge cooperative relations with peer parts makers from abroad. From VW AG's supplier group, suitable partners were chosen by Chinese suppliers and, in some cases, formal joint venture relations between foreign and domestic supplier firms were signed. In many cases, technology transfer and licensing agreements were reached with SVW at times assisting the Chinese factory with the purchase of the process technology. Second, key engineers from the Chinese supplier were sent overseas to train with their foreign counterparts. Upon completion of their overseas sabbatical, the newly trained engineers then returned to China to educate the resident engineers of the local parts maker on the manufacturing techniques learned from abroad.

Wang commented:

> It turned out that the investment in technological knowledge and manufacturing process transfer for the supplier group would be more than twice the investment in the car factory itself. We had to solve this financing problem ourselves. These were exhilarating, and at times trying, days for Dr. Welkner, then the deputy Managing Director, and myself. We worked at being a good team. Dr. Welkner coordinated the German side and searched for possible foreign partners, Mr. Paul, a technical expert, organized technical and engineering matters, while I searched for local suppliers. We worked hard together to lay the groundwork for the success of SVW. It wasn't easy but a personal philosophy evolved from our interactions: respect each other; trust each other; learn from each other.

## Stubborn Independence

Surprisingly, a resistance to technology transfer existed among certain local suppliers. After having established a technology and licensing agreement with a European parts manufacturer, the Chinese often thought that acquiring the sought-after technology was enough. When the contract ended the Chinese often refused to continue the relationship, preferring to continue manufacturing the part themselves without outside help. Most often, the quality standards of the parts produced would begin to slip and not meet SVW standards. SVW would thus either reject the parts or advise the management to seek external help to improve their production. Eventually the more enterprising would return to their original partner and most often transition into an actual joint venture.

Prospective parts suppliers were subjected to a lengthy localization protocol to ensure the ongoing quality of the item delivered (see **Exhibit 6**). Quality testing in the localization protocol included functional basics such as dimensions, strength, and durability. Batteries, for example, were probed for their charge capacity, charging speed, charging cycle, and discharge rate. In 1985, the first parts sourced locally were tires, radios, speakers, antennae, and—significantly—the Santana brand name plate: made in China.

## Continuing Quality Improvement

After the introduction of updated technology to its suppliers, SVW initiated a continuous quality improvement program. In 1986, Chinese workmanship was known more for its economy than its quality. The extremely fine tolerances required for car parts meant that SVW suppliers had to breach this perceived Chinese quality gap. SVW demanded aggressive quality improvements from its suppliers. Repeat business for a specific supplier was tied to the continuing improvement in the quality of the components it manufactured. SVW categorized its suppliers into A,B, or C classes: A suppliers produced parts of export standard; B suppliers produced parts which were used for the domestic market though were not yet of export quality; and C suppliers produced parts which were below even first-rate domestic standards. In 1994, of the greater than 300 suppliers to SVW, 12 ranked as A suppliers.

## Rating Suppliers

The classification of suppliers into A, B, and C classes was based on numerical scores on tests managed by Mr. Gu Sanmin of the Quality Assurance department at SVW. Of a maximum of 100%, A suppliers scored between 90% - 100%; B suppliers scored between 75% - 89%; and C suppliers scored below 74%. The general exam was divided into two segments with each contributing equally to the final score. Half the scoring was based on inspection of a supplier's quality systems benchmarked against ISO 9004 guidelines with the remaining half derived from a critique of the supplier's manufacturing process. The latter examined, among others, a supplier's parts against a quality checklist. For example, Gu would inspect a factory's raw materials sourcing arrangement, quality "in the field," process material flow, monitoring equipment on the shop floor, and workforce.

## The Inquisition

SVW's quality assurance department managed scoring with six adjudicators on staff who were divided according to areas of expertise. In a typical year, the QA department would visit approximately 100 suppliers for testing. Examiners administering classifications testing were hired according to two criteria: technical knowledge and facility with a foreign language, either German or English. "All examiners are trained in the technical specifications of our German VW parent. As all the technical documents are written in either English or German, it is imperative that our staff speak and read either German or English to continually update themselves on the changing standards of

excellence in the auto industry," said Gu. Testers were required to recommend changes based upon site checks. In one tire valve factory for example, Gu related his displeasure with the supplier's labor intensive manufacturing. "Much of their process could have been automated," Gu said. "As management was resistant to change, I recommended a switch to a supplier in Changchun with a more automated process."

Classification of suppliers changed frequently: A suppliers were liable to fall to a B classification if the SVW imposed quality standards were not met. Moreover, with the continued development of the industry, by 1994, there were some parts which could be sourced from multiple suppliers.

## Paying for Quality

For its demands, SVW rewarded its suppliers handsomely:

- SVW was willing to pay a purchase price capped at the price of a similar import plus custom duties
- SVW guaranteed a profit for every manufacturer in its parts supplier network

## Managing the Relationship

Three departments within SVW managed the relationship with suppliers. First, *the product engineering department* specified the technical details such as tolerances necessary for the incorporation of a part within the Santana. Second, the *supplies department* coordinated purchasing and commercial affairs between suppliers and SVW. Third, *the quality assurance department* sought feedback from the shop floor and from customers to relate to suppliers. In 1994, SVW attempted to revamp operations by including just-in-time delivery (rare in China) and by introducing the concepts of lean production into its Anting factory.

In addition, with the establishment of the new joint venture in Changchun, it was decided that a central office to manage the local parts content development program would be more efficient. Due to regional competition, an office located in either of the two factories would be seen as having more responsibility for and loyalty to the factory of residency. This office was established in Beijing with VW AG staff which has left the main pressure on the VW AG staff to continue the development of locally sourced parts.

## Community Building

Furthermore, SVW organized their suppliers into a Santana Localization Community. There were approximately 150 members in the community. The community served to forge closer ties between SVW and its suppliers, and perhaps more importantly among the suppliers themselves. The organizing principle behind the localization community was the relentless pursuit of quality. To this end, the community initiated yearly "quality conferences" to open broader communications between suppliers and SVW (see **Exhibit 7** for some members of the Santana Localization Community).

## Pride in the Product

As a successful venture in a key pillar industry, the enterprise received lots of attention from every level of the Chinese government. In April of 1990, during the fifth-anniversary celebrations of SVW's incorporation, central government dignitaries visited the Anting factory.

In calligraphy displayed upon the walls of the factory, Premier Li Peng urged SVW to "strive for the development of China's automobile industry." On completion of a new factory floor in September of 1990, President Jiang Zemin inscribed calligraphy which stated: "Congratulations on SVW's completion of construction. Make contributions toward the Four Modernizations of our country." In 1991, in Deng Xiaoping's visit to southern China, SVW was a stop on his itinerary. In 1994, the Government named SVW "the best joint venture in China."

## Working for SVW

Wang Rongjun, the first Chinese General Manager, was a Chinese car man. He was trained as an engineer and had designed cars in his university days. He had worked his way through each of the various stages of the Chinese automotive industry from its founding to the present day and his biography read like the history of the Chinese car industry. He had worked in most of the major vehicle manufacturing plants throughout China during his career. His four-year appointment as Managing Director of SVW ended in 1990, when he was made secretary to the Party Committee in Shanghai. In November of 1994, he was playing a critical role as Chairman of the Santana Localization Community.

Production workers were usually graduates of junior high school who lived in the predominately agricultural Jiading County. New manufacturing hires were given a three-year training course which included classroom lessons and practical training in machinery, welding, and forging. Upon completion of the training course, trainees were qualified as line workers. Training for secretarial and sales staff lasted two years and included lessons in accounting and book-keeping. SVW actively sponsored adult education in night school programs. Such programs were targeted to standards of excellence defined by ISO 9000. Overseas training in either Germany, Japan, or Latin America were provided for select local managers, accountants, and designers. Continuing engineering training was also granted to select employees at local universities.

## Pay

Production line workers at SVW were paid an average of 1,300 RMB per month. The base pay of each employee was adjusted by a premium coefficient which was determined by his/her line supervisor. The premium coefficient operated on a sliding scale of 2.0 to 0.8. The premium coefficient for each employee was calculated from a formula based on the number of units and the number of defects produced per production cycle. Scaling wages to productivity was a concept unfamiliar to most Chinese workers: years of tenure in a culture which had bred a stilled egalitarianism into wage structures and initiative. Car-making skills notwithstanding, profit was another concept the employees were taught to understand.

## Conduct

Handbooks on the ethics of SVW were distributed to the workforce. Observation of four principles of conduct, it was noted, was essential to the well being of the company: enthusiasm, efficiency, self-discipline, and self-confidence. Furthermore, the handbook enumerated the rules and regulations of the company, along with the score and lyrics to the company anthem: "We the People of Shanghai Volkswagen."

## A New Challenge for SVW

By 1995, SVW introduced the Santana 2000, a modified version of the Santana originally produced by the joint venture. Though the Santana 2000 differed in exterior styling, sourced components remained largely unchanged from the original. Annual production of both Santana models reaached 159,766 units in 1995. However, it became clear that although a parts supplier could produce a part acceptable for the original model, new requirements for other models or part updates were not automatically translated without considerable technical support from either VW AG or a Western parts manufacturer. It became obvious that the ability to re-engineered create the new technology was not yet installed in the Chinese psyche.

## No More Joint Ventures

In 1993, the Chinese government unexpectedly imposed a moratorium on new passenger car assembly joint ventures effective until 1996. This decision locked out Ford and GM as competitors temporarily, who had each spent many years in negotiations with prospective joint-venture partners. Partnership in component manufacture now became the only way for foreign manufacturers not already producing in China to participate in the industry.

Parts joint ventures by Ford and General Motors presaged the arrival of a flood of American parts manufacturers to China. Moreover, introductions of high technology manufacturing systems for car components were rising dramatically as a result of the aggressive Chinese Automotive Policy.

## All Components and Product Development in China?

It was becoming increasingly clear that demands on SVW to source the remaining imported components from inside China would intensify—and that product development within China would be the next rung on China's strategic ladder, in accordance with Article 31. SVW had done well having started with 5% locally sourced, 60% by 1990 and now, end of 1995 close to 90%. While Loew had often made the point that there were some components and tasks that were still impossible to source in China, the reality was that SVW was about to meet its target. In mid-1995, Allied Signal Automotives' Turbocharging group began manufacturing fuel injection units in Shanghai so that even more of the required components would now be locally sourced. The next frontier for the Chinese parts supplier was an understanding of systems engineering, and an ability to respond to model changes by SVW. These were, indeed, interesting times. While SVW was enjoying great success, it was not blind to the possibility of dramatic sea-changes in the near future.

**Exhibit 1** Selected Articles from the 1994 Policy for the Automotive Industry

- Article 1 The state guides the automotive enterprises to make full use of domestic and overseas capital to expand markets at home and abroad;

- Article 2 The state promotes concentration of investment and restructure of the automotive industry . . . to consolidate production. . . . Support shall be given to two or three [large] automotive enterprises . . . and six or seven [small] automotive enterprises to become the mainstay manufacturers of the country

- Article 8 The purpose of restructuring the automotive industry is such that the automotive enterprise will be organized into groups, products will be serialized and production will be conducted according to technological specialty;

- Article 10 The state will give support to automotive enterprises . . . capable of product and technological development. Enterprises satisfying the following 1995 year-end production targets will be remunerated accordingly:

  (1) For an enterprise with an annual capacity of 300,000 vehicles or over and an annual sales volume of 200,000 vehicles or over with no less than 3% of its annual turnover invested in technological development, the state will support the enterpriseOs expansion to production capacity of 600,000;

  (2) For an enterprise with an annual capacity of 150,000 vehicles or over and an annual sales volume of 100,000 vehicles or over with no less than 2.5% of its annual turnover invested in technological development, the state will support the enterpriseOs expansion to production capacity of 300,000;

  (3) For an enterprise with an annual capacity of 100,000 vehicles or over and an annual sales volume of 80,000 vehicles or over with no less than 2% of its annual turnover invested in technological development, the state will support the enterpriseOs expansion to production capacity of 200,000.

- Article 12 As of 1996, enterprises which satisfy conditions set forth in Article 10 shall be accorded preferential policies in taxation, capital market access, bank loans, access to foreign exchange;

- Article 14 The state encourages efforts to establish product research and development centers. Concerning development of products of import, the state will provide support for joint research through scientific and technological development funds;

- Article 16 New products must be guaranteed to be on par with the technological standing of world class benchmarks of the 1990s;

- Article 28 Foreign joint venture partners shall be chosen on the following criteria:

  (4) having an exclusive patent right and trademark rights of the product;

  (5) having development technology and manufacturing know-how of intended product;

  (6) having an independent international sales channel;

  (7) having adequate financing capability.

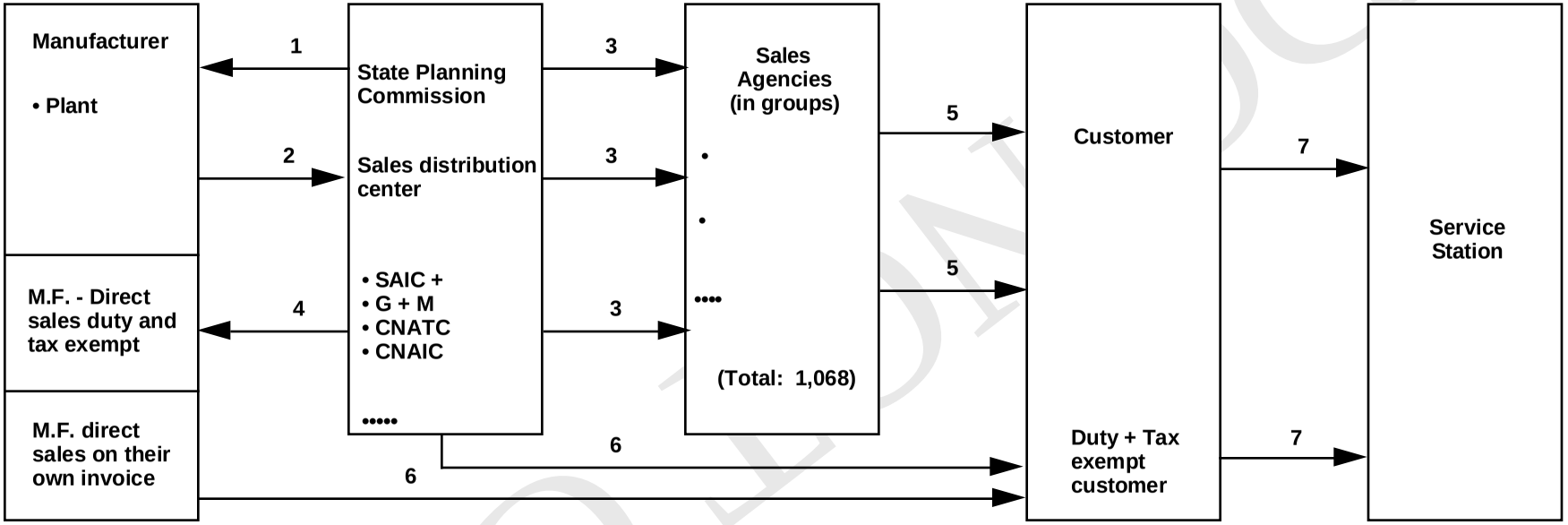
- Article 32 In a Sino-foreign joint venture manufacturing cars, the Chinese partner(s) shall have not less than 50% share;

- Article 34 Prior to the maturing of the Chinese automotive industry, the state continues to exercise control over the importation of automobiles and key assemblies;

- Article 51 Among others, the metallurgical, petrochemical, machine tool, electronic, textile, construction industries, shall coordinate their agendas to support the development of the automotive industry;

- Article 56 The state guides the development of the automotive industry by way of this Policy for the Automotive Industry. All local governments shall support said industrial plan as promulgated by the State Council herein.

**Exhibit 2** Chinese Automobile Order-Delivery-Distribution Sales Flow Chart




SAIC: Shanghai Automotive Industry Corporation

G&M: Ministry of Goods and Materials

CNATC: China National Automotive Trading Corporation

CNAIC: China National Automotive Industrial Corporation

**Exhibit 3** Organizational Structure of SVW

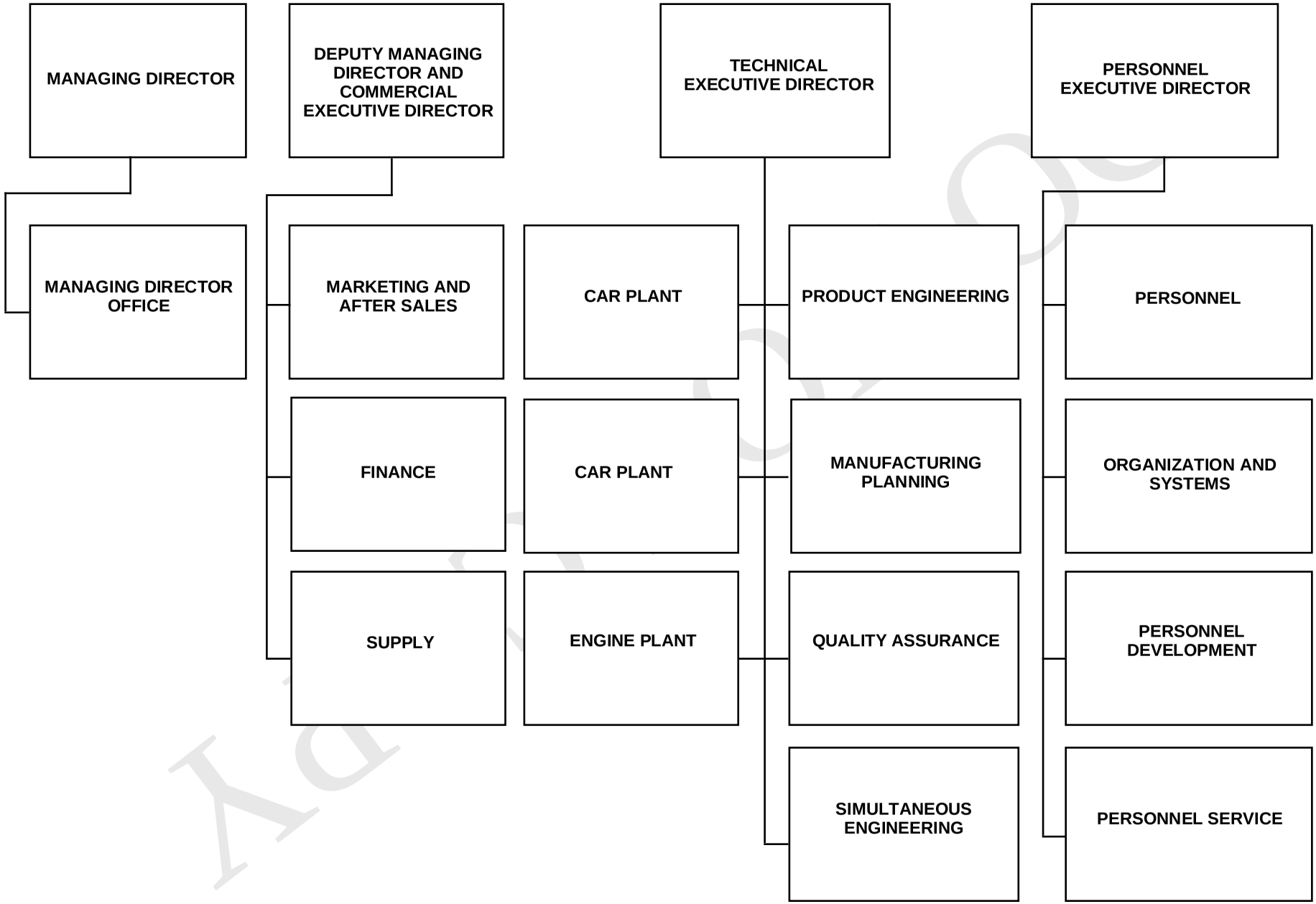


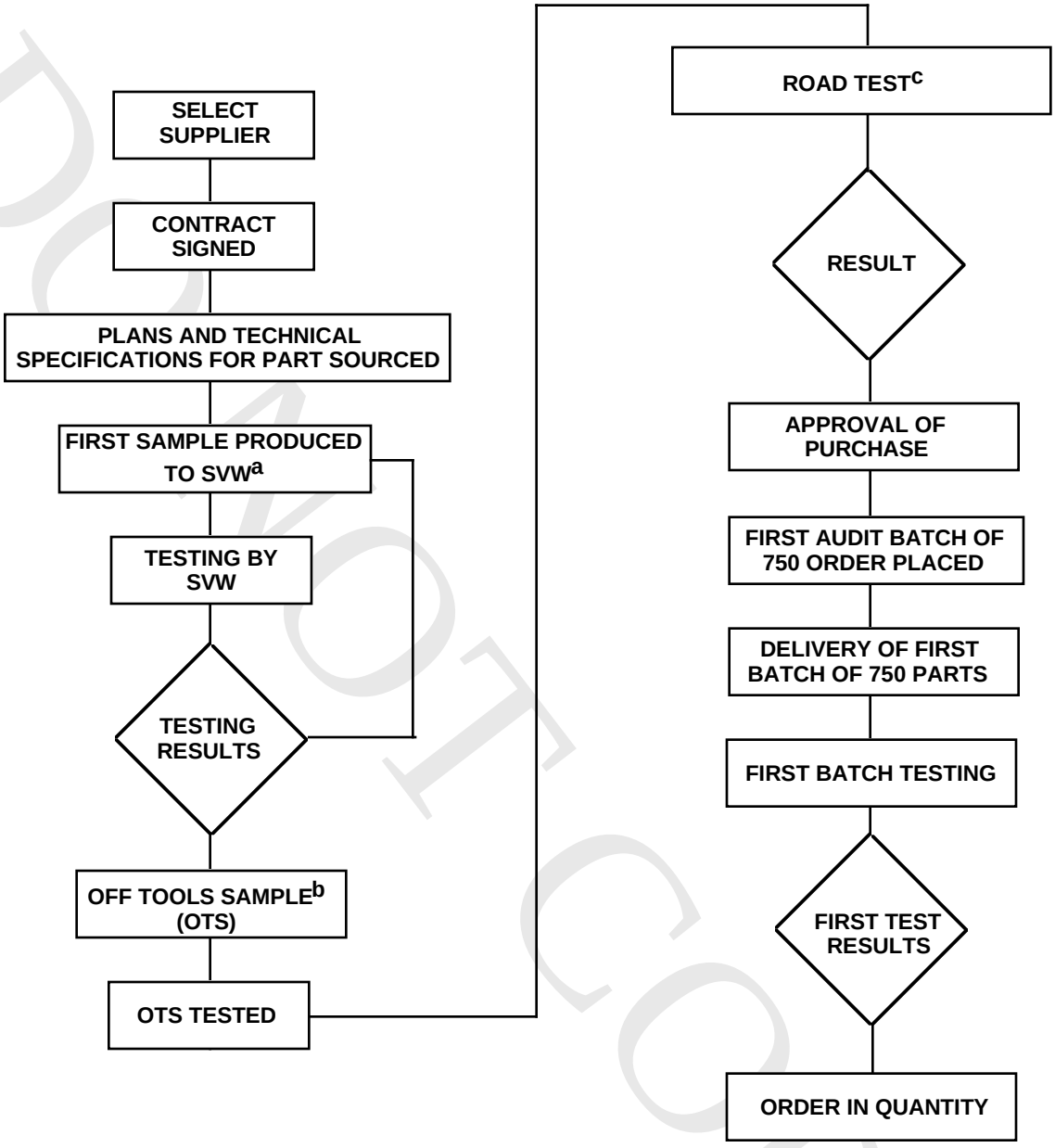
**Exhibit 4** Sales, Production Figures and Balance Sheet

| | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|---|---|---|---|---|---|---|---|---|---|
| **Sales and Production** | | | | | | | | | |
| Sales (mil. RMB) | 62.3 | 422.5 | 714.31 | 1,142.4 | 1,222.3 | 1,822.9 | 3,575.5 | 7,108 | 10,528.9 |
| Output | 1,733 | 8,900 | 11,001 | 15,549 | 15,688 | 18,537 | 35,005 | 65,001 | 10,001 |
| Cars sold | 1,691 | 8,374 | 10,538 | 15,539 | 15,581 | 18,523 | 33,857 | 65,944 | 10,016 |
| Employees | 1,752 | 1,915 | 2,082 | 2,353 | 2,684 | 3,047 | 4,368 | 5,097 | 6,410 |
| **Balance Sheet (mil. RMB)** | | | | | | | | | |
| Fixed assets | 46.0 | 110.3 | 259.0 | 515.5 | 770.1 | 828.4 | 910.4 | 1308.3 | 2,066.9 |
| Current assets | 152.8 | 234.6 | 309.7 | 389.3 | 503.8 | 815.2 | 1,404.4 | 2,118.0 | 2,678.1 |
| Equity | 113.8 | 173.8 | 317.5 | 538.9 | 658.4 | 806.8 | 1,229.7 | 1,798.6 | 2,488.4 |
| Liability | 85.0 | 171.1 | 251.2 | 365.9 | 615.5 | 836.8 | 1,085.1 | 1,627.7 | 2,256.6 |

**Exhibit 5** SVW Component Localization

| Year | Contracted Localization %[a] | Actual Localization Realized |
|---|---|---|
| 1985 | 26.8% | 2.7% |
| 1986 | - | - |
| 1987 | - | - |
| 1988 | 50.9 | 16.8 |
| 1989 | - | - |
| 1990 | - | - |
| 1991 | 83.3 | 70.4 |
| 1992 | - | - |
| 1993 | - | - |
| 1994 | - | - |
| 1995 | 95.0 | 88.6 |

**Exhibit 6** SVW Quality Testing Protocol




[a]First samples are manufactured from standard tools available on the shop floor. Sample lot size is approximately 20.

[b]Off tools samples are sourced components manufactured from customized equipment tailored for the order.

[c]Road testing consisted of 60,000 KM driven in Winter test grounds in Heilongjiang or Summer test grounds in Hainan.

**Exhibit 7** Selected Members of Santana Localization Community

Shanghai Yaohua Glassworks

Shanghai Piston Factory

Shanghai Filter Factory

Shanghai Shiye Electric Appliances Co.

Shanghai Xinjian Gear Factory

Shanghai Clutch Factory

Shanghai Brake Factory

Shanghai Auto Air-Conditioner Factory

Shanghai Auto Nonferrous Foundry

Shanghai Auto Forging Head Factory

Shanghai Automobile Instrument Factory

Nanjing Electrical Spark Plug Factory

Shanghai Transmission Shaft Co.

Shanghai Valve Factory

Jiangnan Mold Plastics Co.

No.1 Auto Radiator Co.

Taizhou Insulating Material Factory

Beijing Hongshi Paint Co.

Shanghai Aviation Motor Factory

Jinan Auto Low Temperature Ignition Co.

Fenghau Auto Fitting Co.