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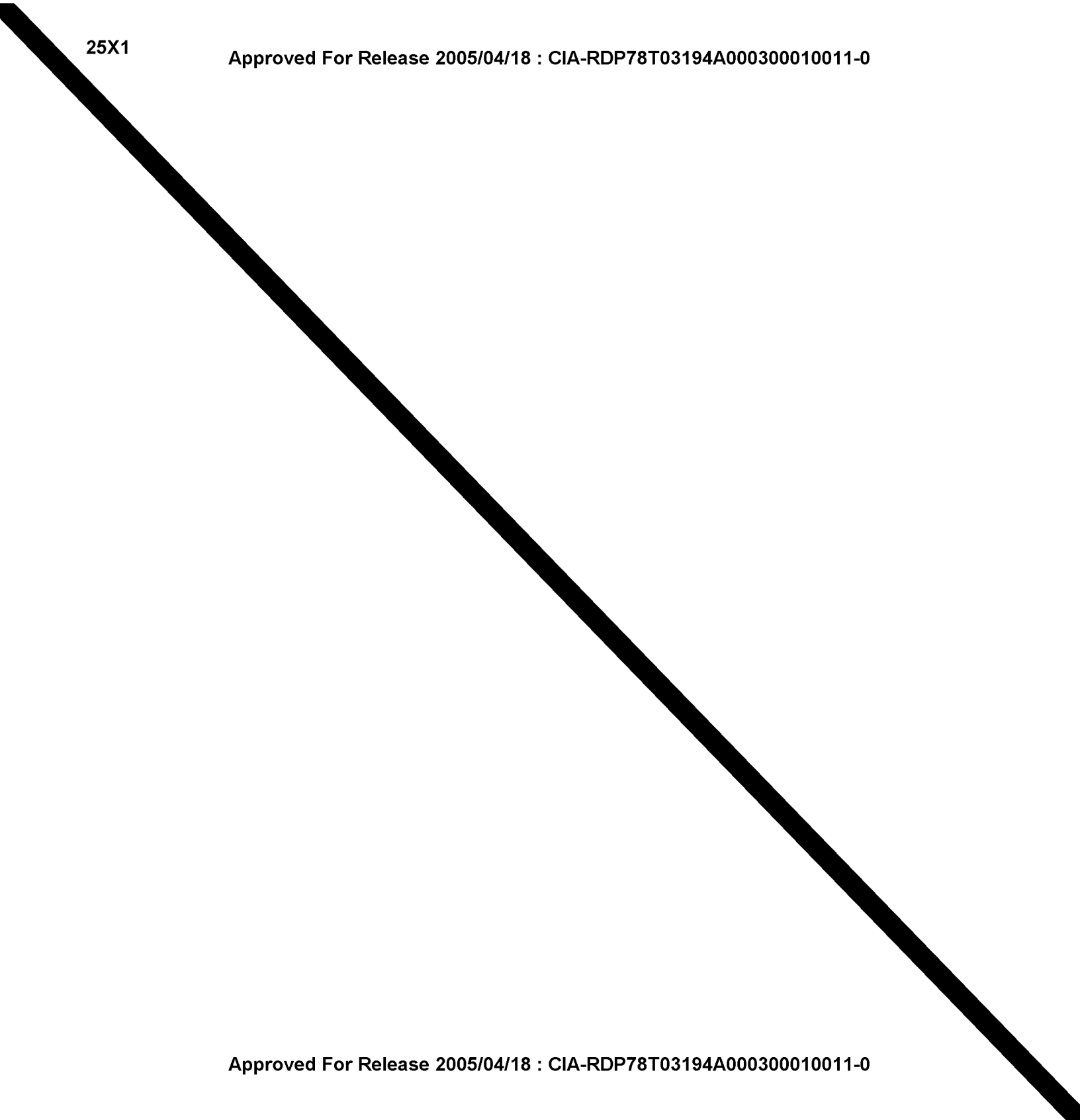

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Awards are normally announced in the first issue (Winter) of each volume for articles published during the preceding calendar year. The editorial board will welcome readers' nominations for awards but reserves to itself exclusive competence in the decision.

The 1970 awards will be announced in an early edition.

Record of a pioneering achievement

THE OXCART STORY

Thomas P. McInnch

One spring day in 1962 a test pilot named Louis Schalk, employed by the Lockheed Aircraft Corporation, took off from the Nevada desert in an aircraft the like of which had never been seen before. A casual observer would have been startled by the appearance of this vehicle; he would perhaps have noticed especially its extremely long, slim, shape, its two enormous jet engines, its long, sharp, projecting nose, and its swept-back wings which appeared far too short to support the fuselage in flight. He might well have realized that this was a revolutionary airplane; he could not have known that it would be able to fly at three times the speed of sound for more than 3,000 miles without refueling, or that toward the end of its flight, when fuel began to run low, it could cruise at over 90,000 feet. Still less would he have known of the equipment it was to carry, or of the formidable problems attending its design and construction.

There was, of course, no casual observer present. The aircraft had been designed and built for reconnaissance; it was projected as a successor to the U-2. Its development had been carried out in profound secrecy. Despite the numerous designers, engineers, skilled and unskilled workers, administrators, and others who had been involved in the affair, no authentic accounts, and indeed scarcely any accounts at all, had leaked. Many aspects have not been revealed to this day, and many are likely to remain classified for some time to come.

The official designation of the aircraft was A-12. By a sort of inspired perversity, however, it came to be called OXCART, a code word also applied to the program under which it was developed. The secrecy in which it was so long shrouded has lifted a bit, and the purpose of this article is to give some account of the inception, development, operation, and untimely demise of this remarkable airplane. The OXCART no longer flies, but it left a legacy of technological achievement which points the way to new projects. And it became the progenitor of a similar but somewhat less sophisticated reconnaissance vehicle called the SR-71, whose existence is well known to press and public.

Sequel to the U-2

The U-2 dated from 1954, when its development began under the direction of a group headed by Richard M. Bissell of CIA. In June 1956, the aircraft became operational, but officials predicted that its useful lifetime over the USSR could hardly be much more than 18 months or two years. Its first flights over Soviet territory revealed that the air defense warning system not only detected but tracked it quite accurately. Yet it remained a unique and invaluable source of intelligence information for almost four years, until on 1 May 1960, Francis Gary Powers was shot down near Sverdlovsk.

Meanwhile, even as the U-2 commenced its active career, efforts were under way to make it less vulnerable. The hope was to reduce the vehicle's radar cross-section, so that it would become less susceptible to detection. New developments in radar-absorbing materials were tried out and achieved considerable success, though not enough to solve the problem. Various far-out designs were explored, most of them seeking to create an aircraft capable of flying at extremely high altitudes, though still at relatively slow speed. None of them proved practicable.

Eventually, in the fall of 1957, Bissell arranged with a contractor for a job of operations analysis to determine how far the probability of shooting down an airplane varied respectively with the plane's speed, altitude, and radar cross-section. This analysis demonstrated that supersonic speed greatly reduced the chances of detection by radar. The probability of being shot down was not of course reduced to zero, but it was evident that the supersonic line of approach was worth serious consideration. Therefore, from this time on, attention focussed increasingly on the possibility of building a vehicle which could fly at extremely high speeds as well as at great altitudes, and which would also incorporate the best that could be attained in radar-absorbing capabilities. Lockheed Aircraft Corporation and Convair Division of General Dynamics were informed of the general requirement, and their designers set to work on the problem without as yet receiving any contract or funds from the government. From the fall of 1957 to late 1958 these designers constantly refined and adapted their respective schemes.

Bissell realized that development and production of such an aircraft would be exceedingly expensive, and that in the early stages at least it would be doubtful whether the project could succeed. To secure the necessary funds for such a program, high officials would have to receive the best and most authoritative presentation of whatever prospects might unfold. Accordingly, he got together a panel consisting of two distinguished authorities on aerodynamics and one physicist, with E. M. Land of the Polaroid Corporation as chairman. Between 1957 and 1959 this panel met about six times, usually in

Land's office in Cambridge. Lockheed and Convair designers attended during parts of the sessions. So also did the Assistant Secretaries of the Air Force and Navy concerned with research and development, together with one or two of their technical advisors. One useful consequence of the participation of service representatives was that bureaucratic and jurisdictional feuds were reduced virtually to nil. Throughout the program both Air Force and Navy gave valuable assistance and cooperation.

As the months went by, the general outlines of what might be done took shape in the minds of those concerned. Late in November 1958, the members of the panel held a crucial meeting. They agreed that it now appeared feasible to build an aircraft of such speed and altitude as to be very difficult to track by radar. They recommended that the President be asked to approve in principle a further prosecution of the project, and to make funds available for further studies and tests. The President and his Scientific Advisor, Dr. James Killian, were already aware of what was going on, and when CIA officials went to them with the recommendation of the panel they received a favorable hearing. The President gave his approval. Lockheed and Convair were then asked to submit definite proposals, funds were made available to them, and the project took on the code name GUSTO.

Less than a year later the two proposals were essentially complete, and on 20 July 1959, the President was again briefed. This time he gave final approval, which signified that the program could get fully under way.

The next major step was to choose between the Lockheed and Convair designs. On 20 August 1959 specifications of the two proposals were submitted to a joint DOD/USAF/CIA selection panel:

	Lockheed	Convair
Speed	Mach 3.2	Mach 3.2
Range (total)	4,120 n.m.	4,000 n.m.
Range (at altitude)	3,800 n.m.	3,400 n.m.
Cruise Altitudes		
Start	84,500 ft.	85,000 ft.
Mid-range	91,000 ft.	88,000 ft.
End	97,600 ft.	94,000 ft.
Dimensions		
Length	102 ft.	79.5 ft.

Span	57 ft.	56.0 ft.
Gross Weight	110,000 lbs.	101,700 lbs.
Fuel Weight	64,600 lbs.	62,000 lbs.
First Flight	22 months	22 months

The Lockheed design was selected, Project GUSTO terminated, and the program to develop a new U-2 follow-on aircraft was named OXCART. On 3 September 1959, CIA authorized Lockheed to proceed with antiradar studies, aerodynamic structural tests, and engineering designs, and on 30 January 1960 gave the green light to produce 12 aircraft.

Pratt and Whitney Division of United Aircraft Corporation had been involved in discussions of the project, and undertook to develop the propulsion system. Their J-58 engine, which was to be used in the A-12, had been sponsored originally by the US Navy for its own purposes, and was to be capable of a speed of Mach 3.0. Navy interest in the development was diminishing, however, and the Secretary of Defense had decided to withdraw from the program at the end of 1959. CIA's requirement was that the engine and airframe be further developed and optimized for a speed of Mach 3.2. The new contract called for initial assembly of three advanced experimental engines for durability and reliability testing, and provision of three engines for experimental flight testing in early 1961.

The primary camera manufacturer was Perkin-Elmer. Because of the extreme complexity of the design, however, a decision was soon made that a back-up system might be necessary in the event the Perkin-Elmer design ran into production problems, and Eastman Kodak was also asked to build a camera. Minneapolis-Honeywell Corporation was selected to provide both the inertial navigation and automatic flight control system. The Firewell Corporation and the David Clark Corporation became the prime sources of pilot equipment and associated life support hardware.

Lockheed's designer was Clarence L. (Kelly) Johnson, creator of the U-2, and he called his new vehicle not A-12 but A-11. Its design exhibited many innovations. Supersonic airplanes, however, involve a multitude of extremely difficult design problems. Their payload-range performance is highly sensitive to engine weight, structural weight, fuel consumption, and aerodynamic efficiency. Small mistakes in predicting these values can lead to large errors in performance. Models of the A-11 were tested and retested, adjusted and readjusted, during thousands of hours in the wind tunnel. Johnson was confident of his design, but no one could say positively whether the bird would fly, still less whether it would fulfill the extremely demanding requirements laid down for it.

To make the drawings and test the model was one thing; to build the

aircraft was another. The most numerous problems arose from the simple fact that in flying through the atmosphere at its designed speed the skin of the aircraft would be subjected to a temperature of more than 550 degrees Fahrenheit. For one thing, no metal hitherto commonly used in aircraft production would stand this temperature, and those which would do so were for the most part too heavy to be suitable for the purpose in hand.

During the design phase Lockheed evaluated many materials and finally chose an alloy of titanium, characterized by great strength, relatively light weight, and good resistance to high temperatures. Titanium was also scarce and very costly. Methods for milling it and controlling the quality of the product were not fully developed. Of the early deliveries from Titanium Metals Corporation some 80 percent had to be rejected, and it was not until 1961, when a delegation from headquarters visited the officials of that company, informed them of the objectives and high priority of the OXCART program, and gained their full cooperation, that the supply became consistently satisfactory.

But this only solved an initial problem. One of the virtues of titanium was its exceeding hardness, but this very virtue gave rise to immense difficulties in machining and shaping the material. Drills which worked well on aluminum soon broke into pieces; new ones had to be devised. Assembly-line production was impossible; each of the small OXCART fleet was, so to speak, turned out by hand. The cost of the program mounted well above original estimates, and it soon began to run behind schedule. One after another, however, the problems were solved, and their solution constituted the greatest single technological achievement of the entire enterprise. Henceforth it became practicable, if expensive, to build aircraft out of titanium.

Since every additional pound of weight was critical, adequate insulation was out of the question. The inside of the aircraft would be like a moderately hot oven. The pilot would have to wear a kind of space suit, with its own cooling apparatus, pressure control, oxygen supply, and other necessities for survival. The fuel tanks, which constituted by far the greater part of the aircraft, would heat up to about 350 degrees, so that special fuel had to be supplied and the tanks themselves rendered inert with nitrogen. Lubricating oil was formulated for operation at 600 degrees F., and contained a diluent in order to remain fluid at operation below 40 degrees. Insulation on the plane's intricate wiring soon became brittle and useless. During the lifetime of the OXCART no better insulation was found; the wiring and related connectors had to be given special attention and handling at great cost in labor and time.

Then there was the unique problem of the camera window. The OXCART was to carry a delicate and highly sophisticated camera, which would look out through a quartz glass window. The effectiveness of the

whole system depended upon achieving complete freedom from optical distortion despite the great heat to which the window would be subjected. Thus the question was not simply one of providing equipment with resistance to high temperature, but of assuring that there should be no unevenness of temperature throughout the area of the window. It took three years of time and two million dollars of money to arrive at a satisfactory solution. The program scored one of its most remarkable successes when the quartz glass was successfully fused to its metal frame by an unprecedented process involving the use of high frequency sound waves.

Another major problem of different nature was to achieve the low radar cross-section desired. The airframe areas giving the greatest radar return were the vertical stabilizers, the engine inlet, and the forward side of the engine nacelles. Research in ferrites, high-temperature absorbing materials and high-temperature plastic structures was undertaken to find methods to reduce the return. Eventually the vertical tail section fins were constructed from a kind of laminated "plastic" material—the first time that such a material had been used for an important part of an aircraft's structure. With such changes in structural materials, the A-11 was redesignated A-12, and as such has never been publicly disclosed.

To test the effectiveness of antiradar devices a small-scale model is inadequate; only a full-size mock-up will do. Lockheed accordingly built one of these, and as early as November 1959, transported it in a specially designed trailer truck over hundreds of miles of highway from the Burbank plant to the test area. Here it was hoisted to the top of a pylon and looked at from various angles by radar. Tests and adjustments went on for a year and a half before the results were deemed satisfactory. In the course of the process it was found desirable to attach some sizable metallic constructions on each side of the fuselage, and Kelly Johnson worried a good deal about the effect of these protuberances on his design. In flight tests, however, it later developed that they imparted a useful aerodynamic lift to the vehicle, and years afterward Lockheed's design for a supersonic transport embodied similar structures.

Pilots for the OXCART would obviously have to be of quite extraordinary competence, not only because of the unprecedented performance of the aircraft itself, but also because of the particular qualities needed in men who were to fly intelligence missions. Brigadier General Don Flickinger, of the Air Force, was designated to draw up the criteria for selection, with advice from Kelly Johnson and from CIA Headquarters. Pilots had to be qualified in the latest high performance fighters, emotionally stable, and well motivated. They were to be between 25 and 40 years of age, and the size of the A-12 cockpit prescribed that they be under six feet tall and under 175

pounds in weight.

Air Force files were screened for possible candidates and a list of pilots obtained. Psychological assessments, physical examinations and refinement of criteria eliminated a good many. Pre-evaluation processing resulted in sixteen potential nominees. This group underwent a further intensive security and medical scrutiny by the Agency. Those who remained were then approached to take employment with the Agency on a highly classified project involving a very advanced aircraft. In November 1961, commitments were obtained from five of the group. The small number recruited at this stage required that a second search be undertaken.

When the final screening was complete the pilots selected for the program were William L. Skliar, Kenneth S. Collins, Walter Ray, Lon Walter, Mele Vojvodich, Jr., Jack W. Weeks, Ronald "Jack" Layton, Dennis B. Sullivan, David P. Young, Francis J. Murray, and Russell Scott. After the selection, arrangements were made with the Air Force to effect appropriate transfers and assignments to cover their training and to lay the basis for their transition from military to civilian status. Compensation and insurance arrangements were similar to those for the U-2 pilots.

One thing to be decided in the earliest stages of the program was where to base and test the aircraft. Lockheed clearly could not do the business at Burbank, where the aircraft were being built, if for no other reason that its runway was too short. The ideal location ought to be remote from metropolitan areas; well away from civil and military airways to preclude observation; easily accessible by air; blessed with good weather the year round; capable of accommodating large numbers of personnel; equipped with fuel storage facilities; fairly close to an Air Force installation; and possessing at least an 8,000 foot runway. There was no such place to be found.

Ten Air Force bases programmed for closure were considered, but none provided the necessary security and annual operating costs at most of them would be unacceptable. Edwards Air Force Base in California seemed a more likely candidate, but in the end it also was passed over. Instead, a secluded site in Nevada was finally picked. It was deficient in personnel accommodations and POL storage, and its long-unused runway was inadequate, but security was good, or could be made so, and a moderate construction program could provide sufficient facilities. Lockheed estimated what would be needed in such respects as monthly fuel consumption, hangars and shop space, housing for personnel, and runway specifications. Armed with the list of major requirements, Headquarters came up with a construction and engineering plan. And in case anyone became curious about what was going on at this remote spot, a cover story stated that the facilities were being prepared for certain radar studies, to be conducted by an engineering firm

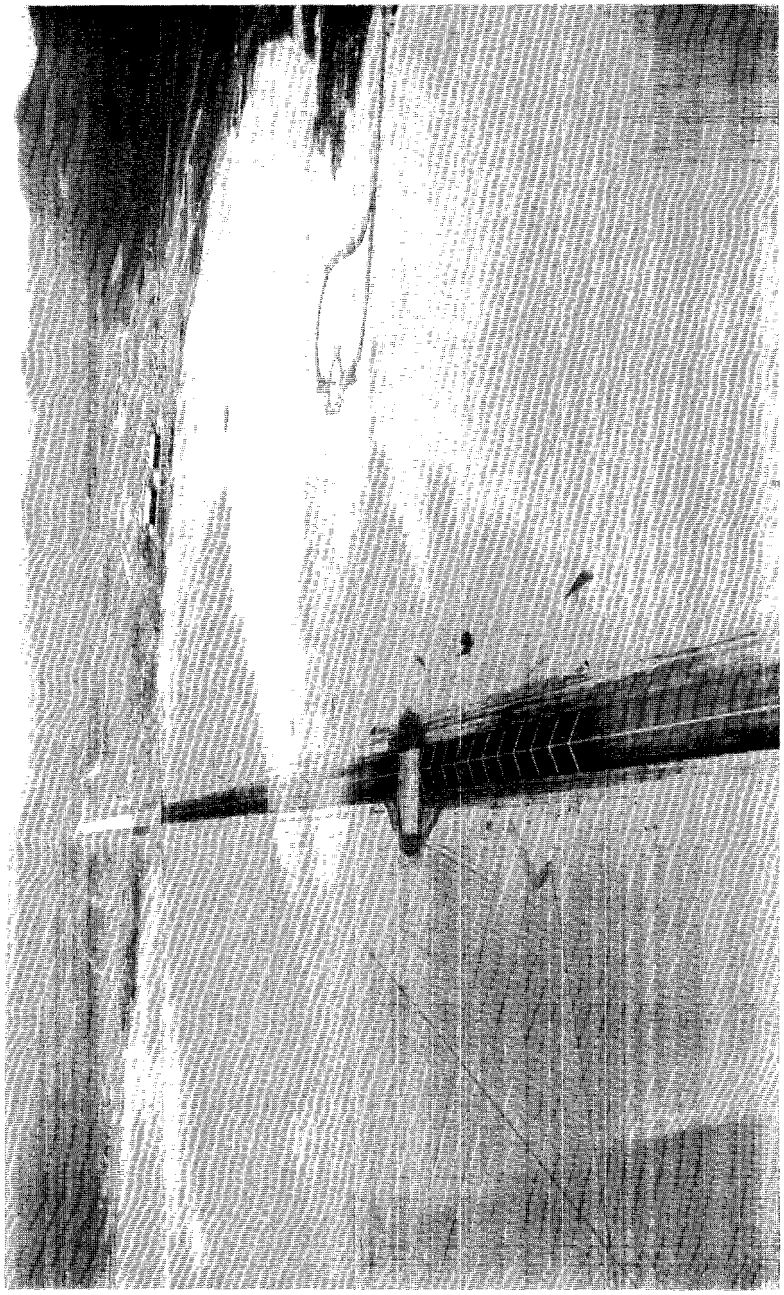

Figure 1. Base with its 8,500 feet of paved runway

with support from the Air Force. The remote location was explained as necessary to reduce the effect of electronic interference from outside sources.

Excellent as it may have been from the point of view of security, the site at first afforded few of the necessities and none of the amenities of life. It was far from any metropolitan center. Lockheed provided a C-47 shuttle service to its plant at Burbank, and a chartered D-18 (Lodestar) furnished transportation to Las Vegas. Daily commuting was out of the question, however, and the construction workers arriving during 1960 were billeted in surplus trailers. A new water well was dug, and a few recreational facilities provided, but it was some time before accommodations became agreeable.

Among the lesser snags, one existed because the laws of Nevada required the names of all contractor personnel staying in the state for more than 48 hours to be reported to state authorities. It was generally felt that to list all these names and identify the companies involved would be likely to give the whole show away. The Agency's General Counsel, however, discovered that Government employees were exempted from these requirements. Thenceforth all contractor personnel going to the site received appointments as Government consultants, and if questions were asked the reply could be that no one but government employees were at the site.

Construction began in earnest in September 1960, and continued on a double-shift schedule until mid-1964. One of the most urgent tasks was to build the runway, which according to initial estimates of A-12 requirements must be 8,500 feet long. The existing asphalt runway was 5,000 feet long and incapable of supporting the weight of the A-12. The new one was built between 7 September and 15 November and involved pouring over 25,000 yards of concrete. Another major problem was to provide some 500,000 gallons of PF-1 aircraft fuel per month. Neither storage facilities nor means of transporting fuel existed. After considering airlift, pipeline, and truck transport, it was decided that the last-named was the most economical, and could be made feasible by resurfacing no more than eighteen miles of highway leading into the base.

Three surplus Navy hangars were obtained, dismantled, and erected on the north side of the base. Over 100 surplus Navy housing buildings were transported to the base and made ready for occupancy. By early 1962 a fuel tank farm was ready, with a capacity of 1,320,000 gallons. Warehousing and shop space was begun and repairs made to older buildings. All this, together with the many other facilities that had to be provided, took a long time to complete. Meanwhile, however, the really essential facilities were ready in time for the forecast delivery date of Aircraft No. 1 in August 1961.

The facilities were ready, but the aircraft were not. Originally promised for delivery at the end of May 1961, the date first slipped to August, largely

because of Lockheed's difficulties in procuring and fabricating titanium. Moreover, Pratt & Whitney found unexpectedly great trouble in bringing the J-58 engine up to OXCART requirements. In March 1961, Kelly Johnson notified Headquarters:

> *"Schedules are in jeopardy on two fronts. One is the assembly of the wing and the other is in satisfactory development of the engine. Our evaluation shows that each of these programs is from three to four months behind the current schedule."*

To this Bissell replied:

> *"I have learned of your expected additional delay in first flight from 30 August to 1 December 1961. This news is extremely shocking on top of our previous slippage from May to August and my understanding as of our meeting 19 December that the titanium extrusion problems were essentially overcome. I trust this is the last of such disappointments short of a severe earthquake in Burbank."*

Realizing that delays were causing the cost of the program to soar, Headquarters decided to place a top-level aeronautical engineer in residence at Lockheed to monitor the program and submit progress reports.

Delays nevertheless persisted. On 11 September, Pratt & Whitney informed Lockheed of their continuing difficulties with the J-58 engine in terms of weight, delivery, and performance. Completion date for Aircraft No. 1 by now had slipped to 22 December 1961, and the first flight to 27 February 1962. Even on this last date the J-58 would not be ready, and it was therefore decided that a Pratt & Whitney J-75 engine, designed for the F-105 and flown in the U-2, should be used for early flights. The engine, along with other components, could be fitted to the A-12 airframe, and it could power the aircraft safely to altitudes up to 50,000 feet and at speeds up to Mach 1.6.

When this decision had been made, final preparations were begun for the testing phase. In late 1961 Colonel Robert J. Holbury, USAF, was named Commander of the base, with an Agency employee as his Deputy. Support aircraft began arriving in the spring of 1962. These included eight F-101's for training, two T-33's for proficiency flying, a C-130 for cargo transport, a U-3A for administrative purposes, a helicopter for search and rescue, and a Cessna-180 for liaison use. In addition, Lockheed provided an F-104 to act as chase aircraft during the A-12 flight test period.

Meanwhile in January 1962, an agreement was reached with the Federal

Aviation Agency that expanded the restricted airspace in the vicinity of the test area. Certain FAA air traffic controllers were cleared for the OXCART Project; their function was to insure that aircraft did not violate the order. The North American Air Defense Command established procedures to prevent their radar stations from reporting the appearance of high performance aircraft on their radar scopes.

Refueling concepts required prepositioning of vast quantities of fuel at certain points outside the United States. Special tank farms were programmed in California, Eielson AFB Alaska, Thule AB Greenland, Kadena AB Okinawa, and Adana, Turkey. Since the A-12 used specially refined fuel, these tank farms were reserved exclusively for use by the OXCART Program. Very small detachments of technicians at these locations maintained the fuel storage facility and arranged for periodic quality control fuel tests.

At the Lockheed Burbank plant, Aircraft No. 1 (serially numbered 121) received its final tests and checkout during January and February 1962, and was partially disassembled for shipment to the site. It became clear very early in OXCART planning that because of security problems and the inadequate runway, the A-12 could not fly from Burbank. Movement of the full-scale radar test model has been successfully accomplished in November 1959, as described above. A thorough survey of the route in June 1961, ascertained the hazards and problems of moving the actual aircraft, and showed that a package measuring 35 feet wide and 105 feet long could be transported without major difficulty. Obstructing road signs had to be removed, trees trimmed, and some roadsides levelled. Appropriate arrangements were made with police authorities and local officials to accomplish the safe transport of the aircraft. The entire fuselage, minus wings, was crated, covered, and loaded on the special-design trailer, which cost about $100,000. On 26 February 1962, it departed Burbank, and arrived at the base according to plan.

First Flights

Upon arrival reassembly of the aircraft and installation of the J-75 engines began. Soon it was found that aircraft tank sealing compounds had failed to adhere to the metals, and when fuel was put into the tanks numerous leaks occurred. It was necessary to strip the tanks of the faulty sealing compounds and reline them with new materials. Thus occurred one more unexpected and exasperating delay in the program.

Finally, on 26 April 1962, Aircraft 121 was ready. On that day, in accordance with Kelly Johnson's custom, Louis Schalk took it for an unofficial, unannounced, maiden flight lasting some 40 minutes. As in all maiden flights minor problems were detected, but it took only four more days to

ready the aircraft for its first official flight.

On 30 April 1962, just under one year later than originally planned, the A-12 officially lifted her wheels from the runway. Piloted again by Louis Schalk, it took off at 170 knots, with a gross weight of 72,000 pounds, and climbed to 30,000 feet. Top speed was 340 knots and the flight lasted 59 minutes. The pilot reported that the aircraft responded well and was extremely stable. Kelly Johnson declared it to be the smoothest official first flight of any aircraft he had designed or tested. The aircraft broke the sound barrier on its second official flight, 4 May 1962, reaching Mach 1.1. Again, only minor problems were reported.

With these flights accomplished, jubilation was the order of the day. The new Director of Central Intelligence, Mr. John McCone, sent a telegram of congratulation to Kelly Johnson. A critical phase had been triumphantly passed, but there remained the long, difficult, and sometimes discouraging process of working the aircraft up to full operational performance.

Aircraft No. 122 arrived at base on 26 June, and spent three months in radar testing before engine installations and final assembly. Aircraft No. 123 arrived in August and flew in October. Aircraft No. 124, a two-seated version intended for use in training project pilots, was delivered in November. It was to be powered by the J-58 engines, but delivery delays and a desire to begin pilot training prompted a decision to install the smaller J-75's. The trainer flew initially in January 1963. The fifth aircraft, No. 125, arrived at the area on 17 December.

Meanwhile the OXCART program received a shot in the arm from the Cuban missile crisis. U-2's had been maintaining a regular reconnaissance vigil over the island, and it was on one of these missions in October that the presence of offensive missiles was discovered. Overflights thereafter became more frequent, but on 27 October an Agency U-2, flown by a Strategic Air Force pilot on a SAC-directed mission, was shot down by a surface-to-air missile. This raised the dismaying possibility that continued manned, high-altitude surveillance of Cuba might become out of the question. The OXCART program suddenly assumed greater significance than ever, and its achievement of operational status became one of the highest national priorities.

At the end of 1962 there were two A-12 aircraft engaged in flight tests. A speed of Mach 2.16 and altitude of 60,000 feet had been achieved. Progress was still slow, however, because of delays in the delivery of engines and shortcomings in the performance of those delivered. One of the two test aircraft was still flying with two J-75 engines, and the other with one J-75 and one J-58. It had long since become clear that Pratt & Whitney had been too optimistic in their forecast; the problem of developing the J-58 up to

OXCART specifications had proved a good deal more recalcitrant than expected. Mr. McCone judged the situation to be truly serious, and on 3 December he wrote to the President of United Aircraft Corporation:

> *"I have been advised that J-58 engine deliveries have been delayed again due to engine control production problems....By the end of the year it appears we will have barely enough J-58 engines to support the flight test program adequately....Furthermore, due to various engine difficulties we have not yet reached design speed and altitude. Engine thrust and fuel consumption deficiencies at present prevent sustained flight at design conditions which is so necessary to complete development."*

By the end of January 1963, ten engines were available, and the first flight with two of them installed occurred on 15 January. Thenceforth all A-12 aircraft were fitted with their intended propulsion system. Flight testing accelerated and contractor personnel went to a three-shift work day.

With each succeeding step into a high Mach regime new problems presented themselves. The worst of all these difficulties—indeed one of the most formidable in the entire history of the program—was revealed when flight testing moved into speeds between Mach 2.4 and 2.8, and the aircraft experienced such severe roughness as to make its operation virtually out of the question. The trouble was diagnosed as being in the air inlet system, which with its controls admitted air to the engine. At the higher speeds the flow of air was uneven, and the engine therefore could not function properly. Only after a long period of experimentation, often highly frustrating and irritating, was a solution reached. This further postponed the day when the A-12 could be declared operationally ready.

Among more mundane troubles was the discovery that various nuts, bolts, clamps, and other debris of the manufacturing process had not been cleared away, and upon engine runup or take-off were sucked into the engine. The engine parts were machined to such close tolerances that they could be ruined in this fashion. Obviously the fault was due to sheer carelessness. Inspection procedures were revised, and it was also found prudent at Burbank to hoist the engine nacelles into the air, rock them back and forth, listen for loose objects, and then remove them by hand.

While on a routine training flight, 24 May 1963, one of the detachment pilots recognized an erroneous and confusing air speed indication and decided to eject from the aircraft, which crashed 14 miles south of Wendover, Utah. The pilot, Kenneth Collins, was unhurt. The wreckage was recovered in two days, and persons at the scene were identified and requested to sign secrecy

agreements. A cover story for the press described the accident as occurring to a F-105, and it is still listed in this way on official records.

All A-12 aircraft were grounded for a week during investigation of the accident. A plugged pitot static tube in icing conditions turned out to be responsible for the faulty cockpit instrument indications—it was not something which would hold things up for long.

Loss of this aircraft nevertheless precipitated a policy problem which had been troubling the Agency for some time. With the growing number of A-12's, how much longer could the project remain secret? The program had gone through development, construction, and a year of flight testing without attracting public attention. But the Department of Defense was having difficulty in concealing its participation because of the increasing rate of expenditures, otherwise unexplained. There was also a realization that the technological data would be extremely valuable in connection with feasibility studies for the SST. Finally, there was a growing awareness in the higher reaches of the aircraft industry that something new and remarkable was going on. Rumors spread, and gossip flew about. Commercial airline crews sighted the OXCART in flight. The editor of *Aviation Week* (as might be expected) indicated his knowledge of developments at Burbank. The secrecy was thinning out.

The President's Announcement

In spite of all this, 1963 went by without any public revelation. President Johnson was brought up to date on the project a week after taking office, and directed that a paper be prepared for an announcement in the spring of 1964. Then at his press conference on 24 February 1964, he read a statement of which the first paragraph was as follows:

> *"The United States has successfully developed on advanced experimental jet aircraft, the A-11, which has been tested in sustained flight at more than 2,000 miles per hour and at altitudes in excess of 70,000 feet. The performance of the A-11 far exceeds that of any other aircraft in the world today. The development of this aircraft has been made possible by major advances in aircraft technology of great significance for both military and commercial applications. Several A-11 aircraft are now being flight tested at Edwards Air Force Base in California. The existence of this program is being disclosed today to permit the orderly exploitation of this advance technology in our military and commercial program."*

The President went on to mention the "mastery of the metallurgy and fabrication of titanium metal" which has been achieved, gave credit to Lockheed and to Pratt & Whitney, remarked that appropriate members of the Senate and House had been kept fully informed, and prescribed that the detailed performance of the A-11 would be kept strictly classified.

The President's reference to the "A-11" was of course deliberate. "A-11" had been the original design designation for the all-metal aircraft first proposed by Lockheed; subsequently it became the design designation for the Air Force YF-12A interceptor which differed from its parent mainly in that it carried a second man for launching air-to-air missiles. To preserve the distinction between the A-11 and the A-12 Security had briefed practically all witting personnel in government and industry on the impending announcement. OXCART secrecy continued in effect. There was considerable speculation about an Agency role in the A-11 development, but it was never acknowledged by the government. News headlines ranged from "US has dozen A-11 jets already flying" to "Secret of sizzling new plane probably history's best kept."

The President also said that "the A-11 aircraft now at Edwards Air Force Base are undergoing extensive tests to determine their capabilities as long-range interceptors." It was true that the Air Force in October 1960, had contracted for three interceptor versions of the A-12, and they were by this time available. But at the moment when the President spoke, there were no A-11's at Edwards and there never had been. Project officials had known that the public announcement was about to be made, but they had not been told exactly when. Caught by surprise, they hastily flew two Air Force YF-12A's to Edwards to support the President's statement. So rushed was this operation, so speedily were the aircraft put into hangars upon arrival, that heat from them activated the hangar sprinkler system, dousing the reception team which awaited them.

Thenceforth, while the OXCART continued its secret career at its own site, the A-11 performed at Edwards Air Force Base in a considerable glare of publicity.[1] Pictures of the aircraft appeared in the press, correspondents could look at it and marvel, stories could be written. Virtually no details were made available, but the technical journals nevertheless had a field day. The unclassified *Air Force and Space Digest,* for example, published a long article

[1] At this point it may be worth while to review the nomenclature applied to various versions of the airplane:

A-11 was the designation given by Clarence L. (Kelly) Johnson of Lockheed Aircraft Corporation to his initial design as submitted to CIA. It was frequently used thereafter, as for example in the President's announcement.

A-12 was the designation for the single-seated CIA reconnaissance version. It remained classified. (Continued on following page)

in its issue of April 1964, commencing: "The official pictures and statements tell very little about the A-11. But the technical literature from open sources, when carefully interpreted, tells a good deal about what it could and, more importantly, what it could not be. Here's the story..."

Going Operational

Three years and seven months after first flight in April 1962 the OXCART was declared ready for operational use at design specifications. The period thus devoted to flight tests was remarkably short, considering the new fields of aircraft performance which were being explored. As each higher Mach number was reached exhaustive tests were carried out in accordance with standard procedures to ensure that the aircraft functioned properly and safely. Defects were corrected and improvements made. All concerned gained experience with the particular characteristics and idiosyncrasies of the vehicle.

The aircraft inlet and related control continued for a long time to present the most troublesome and refractory problem. Numerous attempts failed to find a remedy, even though a special task force concentrated on the task. For a time there was something approaching despair, and the solution when finally achieved was greeted with enormous relief. After all, not every experimental aircraft of advanced performance has survived its flight testing period. The possibility existed that OXCART also would fail, despite the great cost and effort expended upon it.

The main burden of test flights fell upon Lockheed pilots, and some of the aircraft that became available at the site were reserved for the most advanced testing. At the same time, however, the detachment pilots were receiving training and familiarizing themselves with the new vehicle. In the course of doing so, they contributed a good many suggestions for improvements, and their own numerous flights shortened the time required for the test program as a whole. Indeed, one feature of OXCART development was this intimate collaboration between designer, test pilots, operational pilots, and CIA officials, all of whom worked together with great effectiveness.

A few dates and figures will serve to mark the progress of events. By the

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OXCART was the familiar name for the A-12, and also the code name for the program which developed the basic aircraft. Also classified.

YF-12A was the designation given to a two-seated interceptor version of the A-11, three of which were built for the Air Force. Two of these three were flown to Edwards Air Force Base for display after the President's announcement. Unclassified.

SR-71 became the designation for a two-seated reconnaissance version produced for the Air Force; it is the only version which is still operational. Unclassified.

end of 1963 there had been 573 flights totalling 765 hours. Nine aircraft were in the inventory. On 20 July 1963 test aircraft flew for the first time at Mach 3; in November Mach 3.2 (the design speed) was reached at 78,000 feet altitude. The longest sustained flight at design conditions occurred on 3 February 1964; it lasted for ten minutes at Mach 3.2 and 83,000 feet. By the end of 1964 there had been 1,160 flights, totalling 1,616 hours. Eleven aircraft were then available, four of them reserved for testing and seven assigned to the detachment.

The record may be put in another way. Mach 2 was reached after six months of flying; Mach 3 after 15 months. Two years after the first flight the aircraft had flown a total of 38 hours at Mach 2, three hours at Mach 2.6, and less than one hour at Mach 3. After three years, Mach 2 time had increased to 60 hours, Mach 2.6 time to 33 hours, and Mach 3 time to nine hours; all Mach 3 time, however, was by test aircraft, and detachment aircraft were still restricted to Mach 2.9.

As may be seen from the figures, most flights were of short duration, averaging little more than an hour each. Primarily this was because longer flights were unnecessary at this stage of testing. It was also true, however, that the less seen of OXCART the better, and short flights helped to preserve the secrecy of the proceedings. Yet it was virtually impossible for an aircraft of such dimensions and capabilities to remain inconspicuous. At its full speed OXCART had a turning radius of no less than 86 miles. There was no question of staying close to the airfield; its shortest possible flights took it over a very large expanse of territory.

The first long-range, high-speed flight occurred on 27 January 1965, when one of the test aircraft flew for an hour and forty minutes, with an hour and fifteen minutes above Mach 3.1. Its total range was 2,580 nautical miles, with altitudes between 75,600 and 80,000 feet.

Two more aircraft were lost during this phase of the program. On 9 July 1964 Aircraft No. 133 was making its final approach to the runway when at altitude of 500 feet and airspeed of 200 knots it began a smooth steady roll to the left. Lockheed test pilot Bill Parks could not overcome the roll. At about a 45 degree bank angle and 200 foot altitude he ejected. As he swung down to the vertical in the parachute his feet touched the ground, for what must have been one of the narrower escapes in the perilous history of test piloting. The primary cause of the accident was that the servo for the right outboard roll and pitch control froze. No news of the accident filtered out.

On 28 December 1965 Aircraft No. 126 crashed immediately after take-off and was totally destroyed. Detachment pilot Mele Vojvodich ejected safely at an altitude of 150 feet. The accident investigation board determined that a flight line electrician had improperly connected the yaw and pitch

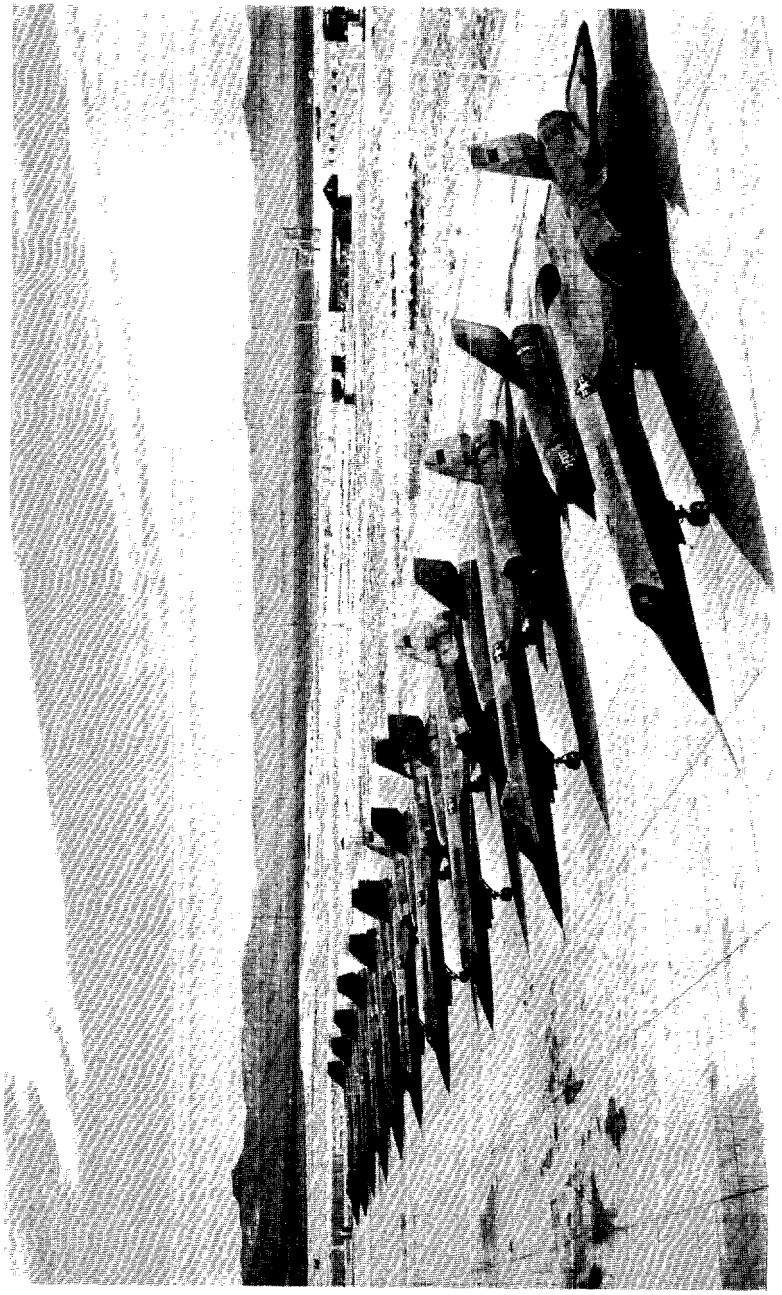

Figure 2. The OXCART fleet in 1964

gyros—had in effect reversed the controls. This time Mr. McCone directed the Office of Security to conduct an investigation into the possibility of sabotage. While nothing of the sort was discovered, there were indications of negligence, as the manufacturer of the gyro had earlier warned of the possibility that the mechanism could be connected in reverse. No action had been taken, however, even by such an elementary precaution as painting the contacts different colors. Again there was no publicity connected with the accident.

The year 1965 saw the test site reach the high point of activity. Completion of construction brought it to full physical size. All detachment pilots were Mach 3.0 qualified. Site population reached 1,835. Contractors were working three shifts a day. Lockheed Constellations made daily flights between the factory at Burbank and the site. Two C-47 flights a day were made between the site and Las Vegas. And officials were considering how and when and where to use OXCART in its appointed role.

Targeting the OX

After the unhappy end of U-2 flights over the Soviet Union, US political authorities were understandably cautious about committing themselves to further manned reconnaissance over unfriendly territory. There was no serious intention to use the OXCART over Russia; save in some unforeseeable emergency it was indeed no longer necessary to do so. What, then, should be done with this vehicle?

The first interest was in Cuba. By early 1964 Project Headquarters began planning for the contingency of flights over that island under a program designated SKYLARK. Bill Parks' accident in early July held this program up for a time, but on 5 August Acting DCI Marshall S. Carter directed that SKYLARK achieve emergency operational readiness by 5 November. This involved preparing a small detachment which should be able to do the job over Cuba, though at something less than the full design capability of the OXCART. The goal was to operate at Mach 2.8 and 80,000 feet altitude.

In order to meet the deadline set by General Carter, camera performance would have to be validated, pilots qualified for Mach 2.8 flight, and coordination with supporting elements arranged. Only one of several equipments for electronic countermeasures (ECM) would be ready by November, and a senior intra-governmental group, including representation from the President's Scientific Advisory Committee, examined the problem of operating over Cuba without the full complement of defensive systems. This panel decided that the first few overflights could safely be conducted without them, but that ECM would be necessary thereafter. The delivery schedule of ECM equipment was compatible with this course of action.

After considerable modifications to aircraft, the detachment simulated Cuban missions on training flights, and a limited emergency SKYLARK capability was announced on the date General Carter had set. With two weeks notice the OXCART detachment could accomplish a Cuban overflight, though with fewer ready aircraft and pilots than had been planned.

During the following weeks the detachment concentrated on developing SKYLARK into a sustained capability, with five ready pilots and five operational aircraft. The main tasks were to determine aircraft range and fuel consumption, attain repeatable reliable operation, finish pilot training, prepare a family of SKYLARK missions, and coordinate routes with North American Air Defense, Continental Air Defense, and the Federal Aviation Authority. All this was accomplished without substantially hindering the main task of working up OXCART to full design capability. We may anticipate the story, however, by remarking that despite all this preparation the OXCART was never used over Cuba. U-2's proved adequate, and the A-12 was reserved for more critical situations.

In 1965 a more critical situation did indeed emerge in Asia, and interest in using the aircraft there began to be manifest. On 18 March 1965 Mr. McCone discussed with Secretaries McNamara and Vance the increasing hazards to U-2 and drone reconnaissance of Communist China. A memorandum of this conversation stated:

> *"It was further agreed that we should proceed immediately with all preparatory steps necessary to operate the OXCART over Communist China, flying out of Okinawa. It was agreed that we should proceed with all construction and related arrangements. However, this decision did not authorize the deployment of the OXCART to Okinawa nor the decision to fly the OXCART over Communist China. The decision would authorize all preparatory steps and the expenditure of such funds as might be involved. No decision has been taken to fly the OXCART operationally over Communist China. This decision can only be made by the President."*

Four days later Brigadier General Jack C. Ledford, Director of the Office of Special Activities, DD/S&T, briefed Mr. Vance on the scheme which had been drawn up for operations in the Far East. The project was called BLACK SHIELD, and it called for the OXCART to operate out of the Kadena Air Force Base in Okinawa. In the first phase, three aircraft would stage to Okinawa for 60-day periods, twice a year, with about 225 personnel involved. After this was in good order, BLACK SHIELD would advance to the point of maintaining a permanent detachment at Kadena. Secretary

Vance made $3.7 million available to be spent in providing support facilities on the island, which were to be available by early fall of 1965.

Meanwhile the Communists began to deploy surface-to-air missiles around Hanoi, thereby threatening our current military reconnaissance capabilities. Secretary McNamara called this to the attention of the Under Secretary of the Air Force on 3 June 1965, and inquired about the practicability of substituting OXCART aircraft for U-2's. He was told that BLACK SHIELD could operate over Vietnam as soon as adequate aircraft performance was achieved.

With deployment overseas thus apparently impending in the fall, the detachment went into the final stages of its program for validating the reliability of aircraft and aircraft systems. It set out to demonstrate complete systems reliability at Mach 3.05 and at 2,300 nautical miles range, with penetration altitude of 76,000 feet. A demonstrated capability for three aerial refuelings was also part of the validation process.

By this time the OXCART was well along in performance. The inlet, camera, hydraulic, navigation, and flight control systems all demonstrated acceptable reliability. Nevertheless, as longer flights were conducted at high speeds and high temperatures, new problems came to the surface, the most serious being with the electrical wiring system. Wiring connectors and components had to withstand temperatures of more than 800 degrees Fahrenheit, together with structural flexing, vibration, and shock. Continuing malfunctions in the inlet controls, communications equipment, ECM systems, and cockpit instruments were in many cases attributable to wiring failures. There was also disturbing evidence that careless handling was contributing to electrical connector failures. Difficulties persisted in the sealing of fuel tanks. What with one thing and another, officials soon began to fear that the scheduled date for BLACK SHIELD readiness would not be met. Prompt corrective action on the part of Lockheed was in order. The quality of maintenance needed drastic improvement. The responsibility for delivering an aircraft system with acceptable reliability to meet an operational commitment lay in Lockheed's hands.

In this uncomfortable situation, John Parangosky, Deputy for Technology, OSA, went to the Lockheed plant to see Kelly Johnson on 3 August 1965. A frank discussion ensued on the measures necessary to insure that BLACK SHIELD commitments would be met, and Johnson concluded that he should himself spend full time at the site in order to get the job done expeditiously. Lockheed President Daniel Haughton offered the full support of the corporation, and Johnson began duty at the site next day. His firm and effective management got Project BLACK SHIELD back on schedule.

Four primary BLACK SHIELD aircraft were selected and final

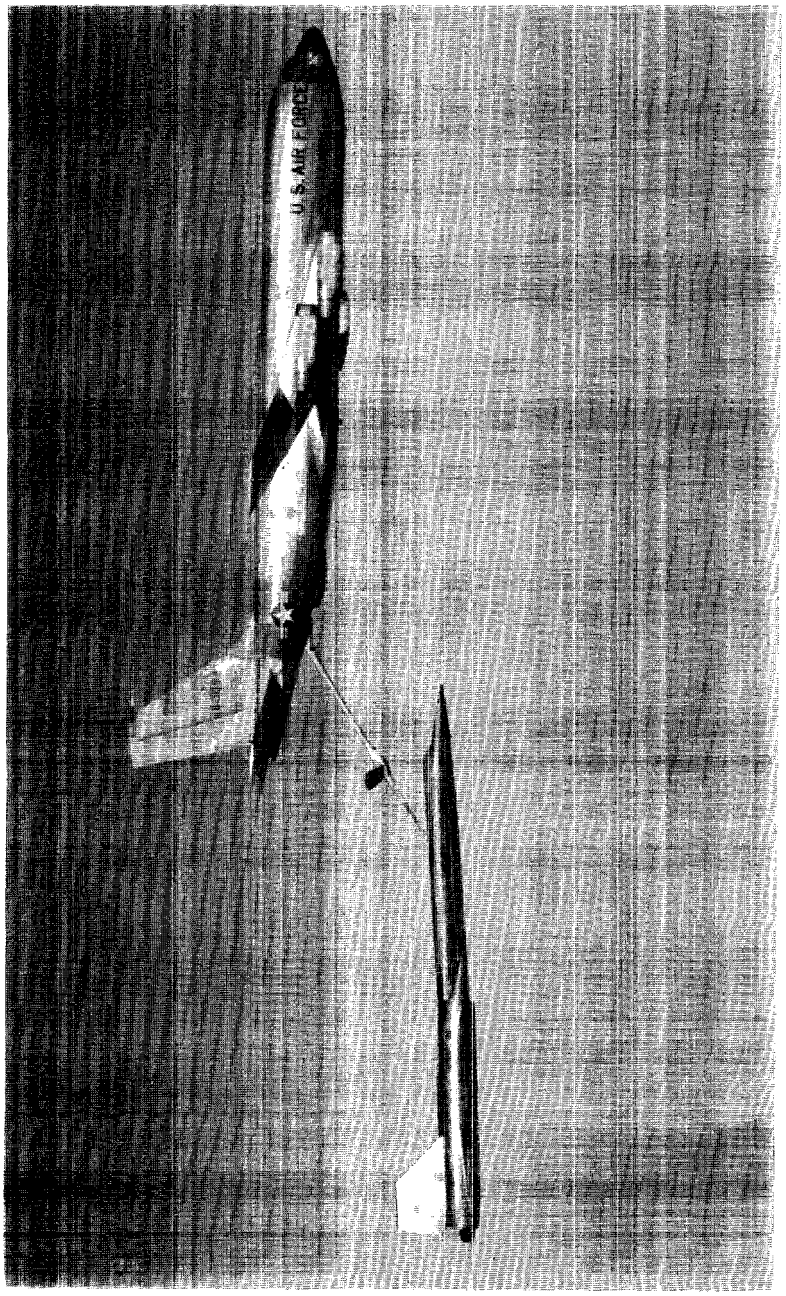

Figure 3. The OXCART being refueled by a KC-135

validation flights conducted. During these tests the OXCART achieved a maximum speed of Mach 3.29, altitude of 90,000 feet, and sustained flight time above Mach 3.2 of one hour and fourteen minutes. The maximum endurance flight lasted six hours and twenty minutes. The last stage was reached on 20 November 1965, and two days later Kelly Johnson wrote General Ledford:

> *"...Over-all, my considered opinion is that the aircraft can be successfully deployed for the BLACK SHIELD mission with what I would consider to be at least as low a degree of risk as in the early U-2 deployment days. Actually, considering our performance level of more than four times the U-2 speed and three miles more operating altitude, it is probably much less risky than our first U-2 deployments. I think the time has come when the bird should leave its nest."*

Ten days later the 303 Committee received a formal proposal that OXCART be deployed to the Far East. The Committee, after examining the matter, did not approve. It did agree, however, that short of actually moving aircraft to Kadena all steps should be taken to develop and maintain a quick reaction capability, ready to deploy within a 21-day period at any time after 1 January 1966.

There the matter remained, for more than a year. During 1966 there were frequent renewals of the request to the 303 Committee for authorization to deploy OXCART to Okinawa and conduct reconnaissance missions over North Vietnam, Communist China, or both. All were turned down. Among high officials there was difference of opinion: CIA, the Joint Chiefs of Staff, and the President's Foreign Intelligence Advisory Board favored the move, while Alexis Johnson representing State, and Defense in the persons of Messrs. McNamara and Vance, opposed it. The proponents urged the necessity of better intelligence, especially on a possible Chinese Communist build-up preparatory to intervention in Vietnam. The opponents felt that better intelligence was not so urgently needed as to justify the political risks of basing the aircraft in Okinawa and thus almost certainly disclosing it to Japanese and other propagandists. They also believed it undesirable to use OXCART and reveal something of its capability until a more pressing requirement appeared. At least once, on 12 August 1966, the divergent views were brought up to the President, who confirmed the 303 Committee's majority opinion against deployment.

Meanwhile, of course, flight testing and crew proficiency training continued. There was plenty of time to improve mission plans and flight tactics,

as well as to prepare the forward area at Kadena. New plans shortened deployment time from the 21 days first specified. Personnel and cargo were to be airlifted to Kadena the day deployment was approved. On the fifth day the first OXCART would depart and travel the 6,673 miles in five hours and 34 minutes. The second would go on the seventh and the third on the ninth day. The first two would be ready for an emergency mission on the eleventh day, and for a normal mission on the fifteenth day.

An impressive demonstration of the OXCART's capability occurred on 21 December 1966 when Lockheed test pilot Bill Parks flew 10,198 statute miles in six hours. The aircraft left the test area in Nevada and flew northward over Yellowstone National Park, thence eastward to Bismarck, North Dakota, and on to Duluth, Minnesota. It then turned south and passed Atlanta enroute to Tampa, Florida, then northwest to Portland, Oregon, then southwest to Nevada. Again the flight turned eastward, passing Denver and St. Louis. Turning around at Knoxville, Tennessee, it passed Memphis in the home stretch back to Nevada. This flight established a record unapproachable by any other aircraft; it began at about the same time a typical government employee starts his work day and ended two hours before his quitting time.[2]

Shortly after this exploit, tragedy befell the program. During a routine training flight on 5 January 1967, the fourth aircraft was lost, together with its pilot. The accident occurred during descent about 70 miles from the base. A fuel gauge failed to function properly, and the aircraft ran out of fuel only minutes before landing. The pilot, Walter Ray, ejected but was killed when he failed to separate from the ejection seat before impact. The aircraft was totally destroyed. Its wreckage was found on 6 January and Ray's body recovered a day later. Through Air Force channels a story was released to the effect that an Air Force SR-71, on a routine test flight out of Edwards Air Force Base, was missing and presumed down in Nevada. The pilot was identified as a civilian test pilot, and the newspapers connected him with Lockheed. Flight activity at the base was again suspended during investigation of the causes both for the crash and for the failure of the seat separation device.

It is worth observing that none of the four accidents occurred in the high-Mach-number, high-temperature regime of flight. All involved traditional problems inherent in any aircraft. In fact, the OXCART was by this time

[2]Neither on this nor on other long flights was there much trouble from sonic boom. To be sure, the inhabitants of a small village some 30 miles from the site were troubled as the aircraft broke through the sound barrier while gaining altitude. A change of course remedied this. At altitude OXCART produced no more than an ominous rumble on the ground and since the plane was invisible to the naked eye no one associated this sound with its actual source.

performing at high speeds, with excellent reliability.

BLACK SHIELD

About May of 1967 prospects for deployment took a new turn. A good deal of apprehension was evident in Washington about the possibility that the Communists might introduce surface-to-surface missiles into North Vietnam, and concern was aggravated by doubts as to whether we could detect such a development if it occurred. The President asked for a proposal on the matter; CIA briefed the 303 Committee and once again suggested that the OXCART be used. Its camera was far superior to those on drones or on the U-2; its vulnerability was far less. The State and Defense members of the Committee decided to re-examine the requirement and the political risks involved. While they were engaged in their deliberations, the Director of Central Intelligence, Mr. Helms, submitted to the 303 Committee another formal proposal to deploy the OXCART. In addition, he raised the matter at President Johnson's "Tuesday lunch" on 16 May, and received the President's approval to "go." Walt Rostow later in the day formally conveyed the President's decision, and the BLACK SHIELD deployment plan was forthwith put into effect.

On 17 May airlift to Kadena began. On 22 May the first A-12 (Serial No. 131) flew nonstop to Kadena in six hours and six minutes. Aircraft No. 127 departed on 24 May and arrived at Kadena five hours and 55 minutes later. The third, No. 129, left according to plan on 26 May 1967 and proceeded normally until in the vicinity of Wake Island the pilot experienced difficulties with the inertial navigation and communications systems. In the circumstances, he decided to make a precautionary landing at Wake Island. The prepositioned emergency recovery team secured the aircraft without incident and the flight to Kadena resumed next day.

Arrangements were made to brief the Ambassadors [redacted] 25X1
25X1 in the Philippines, Formosa, Thailand, South Vietnam, and Japan, and the High Commissioner [redacted] Okinawa. The Prime Ministers of Japan and Thailand were advised, as were the President and Defense Minister of the Republic of China. The Chiefs of the Air Force of Thailand and the Republic of China were also briefed. Reactions were favorable.

On 29 May 1967, the unit at Kadena was ready to fly an operational mission. Under the command of Colonel Hugh C. Slater two hundred and sixty personnel had deployed to the BLACK SHIELD facility. Except for hangars, which were a month short of completion, everything was in shape for sustained operations. Next day the detachment was alerted for a mission on 31 May, and the moment arrived which would see the culmination of ten years of effort, worry, and cost. As fate would have it, on the morning of the

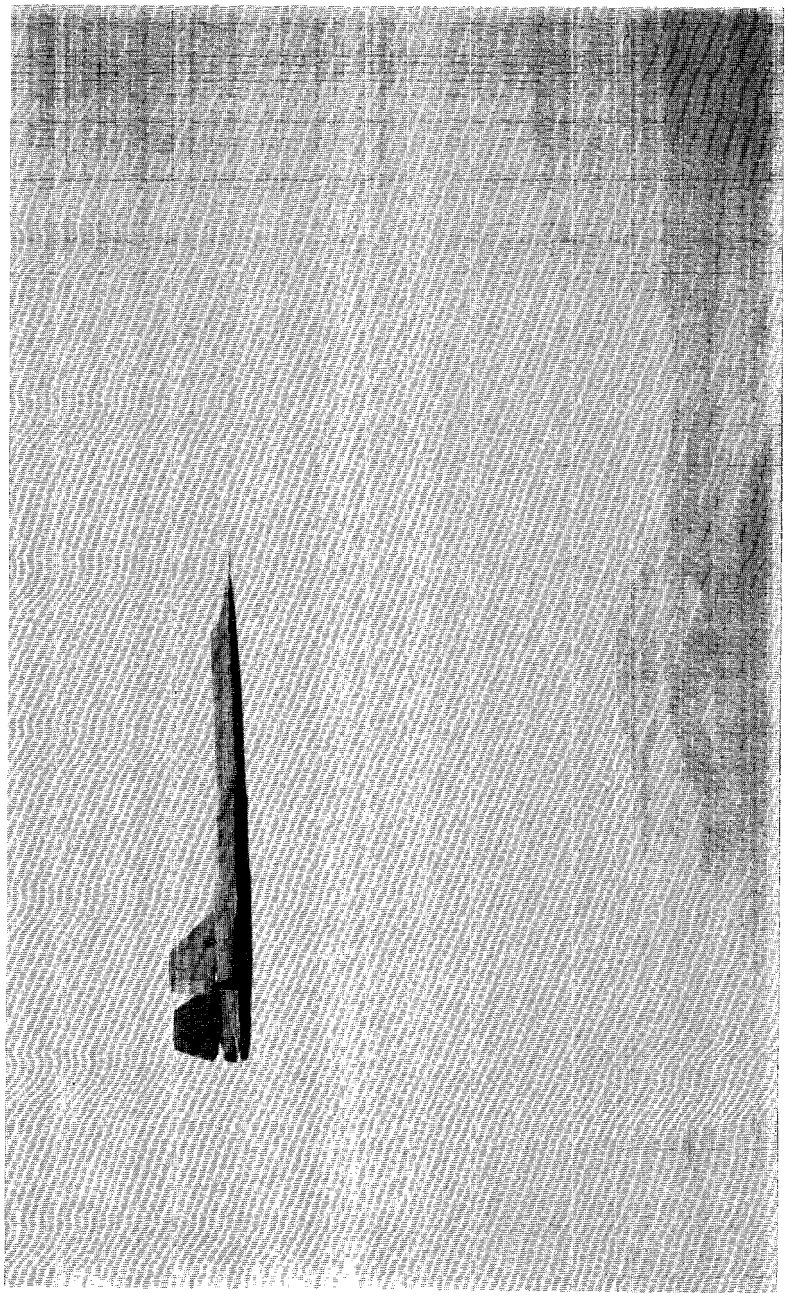

Figure 4. The OXCART off-loading fuel at a rate of 6,000 pounds per minute before landing

31st heavy rain fell at Kadena. Since weather over the target area was clear, preparations continued in hopes that the local weather would clear. When the time for take-off approached, the OXCART, which had never operated in heavy rain, taxied to the runway, and took off while the rain continued.

This first BLACK SHIELD mission followed one flight line over North Vietnam and one over the Demilitarized Zone. It lasted three hours and 39 minutes, and the cruise legs were flown at Mach 3.1 and 80,000 feet. Results were satisfactory. Seventy of the 190 known SAM sites in North Vietnam were photographed, as were nine other priority targets. There were no radar signals detected, indicating that the first mission had gone completely unnoticed by both Chinese and North Vietnamese.

Fifteen BLACK SHIELD missions were alerted during the period from 31 May to 15 August 1967. Seven of the fifteen were flown and of these four detected radar tracking signals, but no hostile action was taken against any of them. By mid-July they had determined with a high degree of confidence that there were no surface-to-surface missiles in North Vietnam.

All operational missions were planned, directed, and controlled by Project Headquarters in Washington. A constant watch was maintained on the weather in the target areas. Each day at a specified hour (1600 hours local) a mission alert briefing occurred. If the forecast weather appeared favorable, the Kadena base was alerted and provided a route to be flown. The alert preceded actual take-off by 28 to 30 hours. Twelve hours prior to take-off (H minus 12) a second review of target weather was made. If it continued favorable, the mission generation sequence continued. At H minus 2 hours, a "go-no-go" decision was made and communicated to the field. The final decision, it should be noted, depended not solely on weather in the target area; conditions had to be propitious also in the refueling areas and at the launch and recovery base.

Operations and maintenance at Kadena began with the receipt of alert notification. Both a primary aircraft and pilot and a back-up aircraft and pilot were selected. The aircraft were given thorough inspection and servicing, all systems were checked, and the cameras loaded into the aircraft. Pilots received a detailed route briefing in the early evening prior to the day of flight. On the morning of the flight a final briefing occurred, at which time the condition of the aircraft and its systems was reported, last-minute weather forecasts reviewed, and other relevant intelligence communicated, together with any amendments or changes in the flight plan. Two hours prior to take-off the primary pilot had a medical examination, got into his suit, and was taken to the aircraft. If any malfunctions developed on the primary aircraft, the back-up could execute the mission one hour later.

A typical route profile for a BLACK SHIELD mission over North

Vietnam included a refueling shortly after take-off, south of Okinawa, the planned photographic pass or passes, withdrawal to a second aerial refueling in the Thailand area, and return to Kadena. So great was the OXCART's speed that it spent only 12 1/2 minutes over North Vietnam in a typical "single pass" mission, or a total of 21 1/2 minutes on two passes. Its turning radius of 86 miles was such, however, that on some mission profiles it might be forced during its turn to intrude into Chinese airspace.

Once landed back at Kadena, the camera film was removed from the aircraft, boxed, and sent by special plane to the processing facilities. Film from earlier missions was developed at the Eastman Kodak plant in Rochester, New York. By late summer an Air Force Center in Japan carried out the processing in order to place the photointelligence in the hands of American commanders in Vietnam within 24 hours of completion of a BLACK SHIELD mission.

Between 16 August and 31 December 1967, twenty-six missions were alerted. Fifteen were flown. On 17 September one SAM site tracked the vehicle with its acquisition radar but was unsuccessful with its Fan Song guidance radar. On 28 October a North Vietnamese SAM site for the first time launched a single, albeit unsuccessful, missile at the OXCART. Photography from this mission documented the event with photographs of missile smoke above the SAM firing site, and with pictures of the missile and of its contrail. Electronic countermeasures equipment appeared to perform well against the missile firing.

During the flight of 30 October 1967, pilot Dennis Sullivan detected radar tracking on his first pass over North Vietnam. Two sites prepared to launch missiles but neither did. During the second pass at least six missiles were fired at the OXCART, each confirmed by missile vapor trails on mission photography. Sullivan saw these vapor trails and witnessed three missile detonations. Post-flight inspection of the aircraft revealed that a piece of metal had penetrated the lower right wing fillet area and lodged against the support structure of the wing tank. The fragment was not a warhead pellet but may have been a part of the debris from one of the missile detonations observed by the pilot.

Between 1 January and 31 March 1968 six missions were flown out of fifteen alerted. Four of these were over North Vietnam and two over North Korea. The first mission over North Korea on 26 January occurred during a very tense period following seizure of the Pueblo on the 23rd. The aim was to discover whether the North Koreans were preparing any large scale hostile move on the heels of this incident. Chinese tracking of the flight was apparent, but no missiles were fired at the plane.

The Department of State was reluctant to endorse a second mission over

North Korea for fear of the diplomatic repercussions which could be expected if the aircraft came down in hostile territory. Brigadier General Paul Bacalis then briefed Secretary Rusk on the details and objectives of the mission, and assured him that the aircraft would transit North Korea in no more than seven minutes. He explained that even if some failure occurred during flight the aircraft would be highly unlikely to land either in North Korea or in China. Secretary Rusk made suggestions to alter the flight plan, thus becoming the project's highest ranking flight planner.

Between 1 April and 9 June 1968 two missions were alerted for North Korea. Only the mission which flew on 8 May was granted approval.

The SR-71

All through the OXCART program the Air Force had been exceedingly helpful. It gave financial support, conducted the refueling program, provided operational facilities at Kadena, and air-lifted OXCART personnel and supplies to Okinawa for the operations over Vietnam and North Korea. It also ordered from Lockheed a small fleet of A-11's, which upon being finished as two-seated reconnaissance aircraft would be named SR-71. These would become operational about 1967.

The stated mission of the SR-71 was to conduct "post-strike reconnaissance," that is, to look the enemy situation over after a nuclear exchange. The likelihood of using the aircraft in this capacity hardly appeared great, but SR-71 was of course also capable of ordinary intelligence missions. For these purposes, however, the OXCART possessed certain clear advantages. It carried only one man, and largely for this reason it had room for a much bigger and better camera, as well as for various other collection devices which at the time could not be carried by the SR-71. It was certainly the most effective reconnaissance aircraft in existence, or likely to be in existence for years to come. Also it was operated by civilians, and could be employed covertly, or at least without the number of personnel and amount of fanfare normally attending an Air Force operation.

The fact that SR-71's were ordered eased the path of OXCART development, since it meant that the financial burden was shared with the Air Force, and the cost per aircraft was somewhat reduced by producing greater numbers. In the longer run, however, the existence of SR-71 spelled the doom of OXCART, for reasons which appear to have been chiefly financial, and in a manner now to be related.

Ending

During November 1965, the very month when OXCART was finally declared operational, the moves toward its demise commenced. Within the Bureau of the Budget a memorandum was circulated expressing concern at the costs of the A-12 and SR-71 programs, both past and projected. It questioned the requirement for the total number of aircraft represented in the combined fleets, and doubted the necessity for a separate CIA (OXCART) fleet. Several alternatives were proposed to achieve a substantial reduction in the forecasted spending, but the recommended course was to phase out the A-12 program by September 1966 and stop any further procurement of SR-71 aircraft. Copies of this memorandum were sent to the Department of Defense and the CIA with the suggestion that those agencies explore the alternatives set out in the paper. But the Secretary of Defense declined to consider the proposal, presumably because the SR-71 would not be operational by September 1966.

Things remained in this state until in July 1966 the Bureau of the Budget proposed that a study group be established to look into the possibility of reducing expenses on the OXCART and SR-71 programs. The group was requested to consider the following alternatives:

1. Retention of separate A-12 and SR-71 fleets, i.e., status quo.
2. Collocation of the two fleets.
3. Transfer of the OXCART mission and aircraft to SAC.
4. Transfer of the OXCART mission to SAC and storage of A-12 aircraft.
5. Transfer of the OXCART mission to SAC and disposal of A-12 aircraft.

The study group included C. W. Fischer, Bureau of the Budget; Herbert Bennington, Department of Defense; and John Parangosky, Central Intelligence Agency.

This group conducted its study through the fall of 1966, and identified three principal alternatives of its own. They were:

1. To maintain the status quo and continue both fleets at current approved levels.
2. To mothball all A-12 aircraft, but maintain the OXCART capability by sharing SR-71 aircraft between SAC and CIA.
3. To terminate the OXCART fleet in January 1968 (assuming an operational readiness date of September 1967 for the SR-71) and assign all missions to the SR-71 fleet.

On 12 December 1966 there was a meeting at the Bureau of the Budget attended by Mr. Helms, Mr. Schultze, Mr. Vance, and Dr. Hornig, Scientific Advisor to the President. Those present voted on the alternatives proposed in the Fischer-Bennington-Parangosky report. Messrs. Vance, Schultze, and Hornig chose to terminate the OXCART fleet, and Mr. Helms stood out for eventual sharing of the SR-71 fleet between CIA and SAC. The Bureau of the Budget immediately prepared a letter to the President setting forth the course of action recommended by the majority. Mr. Helms, having dissented from the majority, requested his Deputy Director for Science and Technology to prepare a letter to the President stating CIA's reasons for remaining in the reconnaissance business.

On 16 December Mr. Schultze handed Mr. Helms a draft memorandum to the President which requested a decision either to share the SR-71 fleet between CIA and SAC, or to terminate the CIA capability entirely. This time Mr. Helms replied that new information of considerable significance had been brought to his attention concerning SR-71 performance. He requested another meeting after 1 January to review pertinent facts, and also asked that the memorandum to the President be withheld pending that meeting's outcome. Specifically, he cited indications that the SR-71 program was having serious technical problems and that there was real doubt that it would achieve an operational capability by the time suggested for termination of the A-12 program. Mr. Helms therefore changed his position from sharing the SR-71 aircraft with SAC to a firm recommendation to retain the OXCART A-12 fleet under civilian sponsorship. The Budget Bureau's memorandum was nevertheless transmitted to the President, who on 28 December 1966 accepted the recommendations of Messrs. Vance, Hornig, and Schultze, and directed the termination of the OXCART Program by 1 January 1968.

This decision meant that a schedule had to be developed for orderly phase-out. After consultation with Project Headquarters, the Deputy Secretary of Defense was advised on 10 January 1967 that four A-12's would be placed in storage in July 1967, two more by December, and the last four by the end of January 1968. In May Mr. Vance directed that the SR-71 assume contingency responsibility to conduct Cuban overflights as of 1 July 1967 and take over the dual capability over Southeast Asia and Cuba by 1 December 1967. This provided for some overlap between OXCART withdrawal and SR-71 assumption of responsibility.

Meanwhile, until 1 July 1967 the OXCART Detachment was to maintain its capability to conduct operational missions both from a prepared location overseas and from the US. This included a 15 day quick reaction capability for deployment to the Far East and a seven-day quick reaction for deployment over Cuba. Between 1 July and 31 December 1967 the fleet

would remain able to conduct operational missions either from a prepared overseas base or from home base, but not from both simultaneously. A quick reaction capability for either Cuban overflights or deployment to the Far East would also be maintained.

All these transactions and arrangements occurred before the OXCART had conducted a single operational mission or even deployed to Kadena for such a mission. As recounted above, the aircraft first performed its appointed role over North Vietnam on the last day of May 1967. In succeeding months it demonstrated both its exceptional technical capabilities and the competence with which its operations were managed. As word began to get around that OXCART was to be phased out, high officials commenced to feel some disquiet. Concern was shown by Walt Rostow, the President's Special Assistant; by key Congressional figures, members of the President's Foreign Intelligence Advisory Board, and the President's Scientific Advisory Committee. The phase-out lagged, and the question was reopened.

A new study of the feasibility and cost of continuing the OXCART program was completed in the spring of 1968 and four new alternatives were proposed:

1. Transfer all OXCART aircraft to SAC by 31 October 1968; substitute Air Force for contractor support where possible; turn the test A-12 aircraft over to the SR-71 test facility.
2. Transfer OXCART as in alternative 1, above, and store eight SR-71's.
3. Close the OXCART home base and collocate the fleet with SR-71's at Beale Air Force Base in California, but with CIA retaining control and management.
4. Continue OXCART operations at its own base under CIA control and management.

Mr. Helms expressed his reactions to these alternatives in a memorandum to Messrs. Nitze, Hornig, and Flax, dated 18 April 1968. In it he questioned why, if eight SR-71's could be stored in one option, they could not be stored in all the options, with the resultant savings applied in each case. He questioned the lower cost figures of combining the OXCART with the SR-71's and disagreed, for security reasons, with collocating the two fleets. Above all, however, he felt that the key point was the desirability of retaining a covert reconnaissance capability under civilian management. It was his judgment that such a requirement existed, and he recommended that OXCART continue at its own base under CIA management.

In spite of all these belated efforts, the Secretary of Defense on 16 May

1968 reaffirmed the original decision to terminate the OXCART Program and store the aircraft. At his weekly luncheon with his principal advisers on 21 May 1968, the President confirmed Secretary Clifford's decision.

Early in March 1968, USAF SR-71 aircraft began to arrive at Kadena to take over the BLACK SHIELD commitment, and by gradual stages the A-12 was placed on standby to back up the SR-71. The last operational mission flown by OXCART was on 8 May 1968 over North Korea, following which the Kadena Detachment was advised to prepare to go home. Project Headquarters selected 8 June 1968 as the earliest possible date to begin redeployment, and in the meantime flights of A-12 aircraft were to be limited to those essential for maintaining flying safety and pilot proficiency. After BLACK SHIELD aircraft arrived in the US they would proceed to storage. Those already at base were placed in storage by 7 June.

During its final days overseas the OXCART enterprise suffered yet another blow, as inexplicable as it was tragic. On 4 June Aircraft No. 129, piloted by Jack Weeks, set out from Kadena on a check flight necessitated by a change of engine. Weeks was heard from when 520 miles east of Manila. Then he disappeared. Search and rescue operations found nothing. No cause for the accident was ever ascertained, and it remains a mystery to this day. Once again the official news release identified the lost aircraft as an SR-71 and security was maintained.

A few days afterwards the two remaining planes on Okinawa flew to the US and were stored with the remainder of the OXCART family.

Postscript

In summary: the OXCART Program lasted just over ten years, from its first inception in 1957 through first flights in 1962 to termination in 1968. Lockheed produced 15 OXCARTS, three YF-12-A's, and 31 SR-71's. Five OXCART's were lost in accidents; two pilots were killed, and two had narrow escapes. In addition, two F-101 chase planes were lost with their Air Force pilots during OXCART's testing phase.

As of a year or so ago, the 49 supersonic aircraft had completed more than 7,300 flights, with 17,000 hours in the air. Over 2,400 hours had been above Mach 3.

The main objective of the program—to create a reconnaissance aircraft of unprecedented speed, range, and altitude capability—was triumphantly achieved. It may well be, however, that the most important aspects of the effort lay in its by-products—the notable advances in aerodynamic design, engine performance, cameras, electronic countermeasures, pilot life support systems, antiradar devices, and above all in milling, machining, and shaping

titanium. Altogether it was a pioneering accomplishment.

In a ceremony at the Nevada base on 26 June 1968, Vice Admiral Rufus L. Taylor, Deputy Director of Central Intelligence, presented the CIA Intelligence Star for valor to pilots Kenneth S. Collins, Ronald L. Layton, Francis J. Murray, Dennis B. Sullivan, and Mele Vojvodich for participation in the BLACK SHIELD operation. The posthumous award to pilot Jack W. Weeks was accepted by his widow. The United States Air Force Legion of Merit was presented to Colonel Slater and his Deputy, Colonel Maynard N. Amundson. The Air Force Outstanding Unit Award was presented to the members of the OXCART Detachment (1129th Special Activities Squadron, Detachment 1) and the USAF supporting units.

Wives of the pilots were present and learned for the first time of the activities in which their husbands had been involved. Kelly Johnson was a guest speaker at the ceremony and lamented in moving words the end of an enterprise which had marked his most outstanding achievement in aircraft design. His own awards had already been received: The President's Medal of Freedom in 1964, and on 10 February 1966, the National Medal of Science, from President Johnson, for his contributions to aerospace science and to the national security.

Early analysis of the
Soviet atomic program

SOMEWHERE IN SIBERIA

Henry S. Lowenhaupt

At the halfway point in the September 1958 Second Conference on the Peaceful Uses of Atomic Energy at Geneva, Switzerland, the Russians announced that they had just put into operation an atomic power station "somewhere in Siberia." We were able to start collecting information on it immediately, for we had laid extensive plans for the intelligence exploitation of this conference.[1] Nevertheless, enthusiastic though we were, I doubt that any of us expected this information to be, as it indeed became, the key to understanding Russian facilities for the production of plutonium for nuclear weapons.

At Geneva, Dr. Charles Reichardt, Director of Intelligence, AEC, had been given office space in the secured area at American delegation headquarters so that he could provide liaison between the intelligence personnel and the scientists attending the conference. This included direct support to overt and, if needed, covert collection activities. It was his task to attend all steering committee and all technical group-leader meetings at delegation headquarters. He discussed with selected AEC persons our needs in connection with both specific formal meetings and private conversations between them and foreign scientists. He cabled back to Washington what these persons had learned that was not already known. To assist his operation, I had available personality files and summary data on what the Russians had already published in the atomic field. In addition, I had tried to memorize the 1957 U-2 photography of atomic facilities in Siberia so that we could have this highly sequestered information immediately available without actually having the photography in Geneva.

Following their announcement, the Russian delegation released a movie on their Siberian atomic power station and placed an exhibit on it in the conference exhibition hall. The movie attracted wide attention and a number of Americans visited the English language shows. Their descriptions of the facility in the movie certainly seemed very like that seen under construction in the 1957 U-2 photography of the atomic facility north of Tomsk in

[1] In response to requirements by the Joint Atomic Energy Intelligence Committee.

Central Siberia, [2] although, of course, it could conceivably have been of a similar one elsewhere in the USSR.

They reported that only the first of six atomic power units had been completed. Each unit was to develop 100 megawatts of electricity at a thermodynamic efficiency of 22 percent from a graphite moderated, water-cooled reactor fueled with 200 metric tons of uranium metal of natural isotopic composition. They described the reactor building as looking like a large office structure, rather than the functional cubism of an American reactor facility. The 300 foot high vent stack was placed with the blower and air filter building behind the turbine building and away from the reactor building. Several large centrifugal pumps pushed water under pressure through the reactor; the resulting radioactive, thermally hot water then passed through steam generators and—it was left to the viewer to infer, if he so chose—back to the centrifugal pumps. The secondary circuit of the steam generator produced nonradioactive steam to drive three low pressure turbo-electric generators. Each of the three 33 MW turbogenerators was connected directly to a transformer located in front of the turbine hall. The spent steam was condensed in the basement of the turbine hall and returned to the steam generators. The condenser cooling water circulated through several large natural draft cooling towers. It looked like a very adequate design. The Russians had good reason to feel proud of their achievement.

Oddly enough, it was the number of cooling towers that was the item of real disagreement. The number reported varied from two to five: as witnesses, scientists are apparently no better observers than most people. To both Dr. Reichardt and me, the number was of considerable importance. We knew that there had been six under construction in 1957, three presumably for each of the two dual purpose reactors under construction. We expected them to be used in modern Russian "in-line" fashion as at the GRES II thermal electric power plant in downtown Tomsk City. Here each large coal-fired boiler served a 100 MW turboelectric generator in turn cooled by a single large cooling tower. We remembered that at the atomic plant the cooling tower nearest completion had had dimensions similar to the ones at GRES II, and that we had found enough information in the Russian technical literature to be certain that the GRES II cooling towers dissipated 200-220 megawatts of heat. Also in 1957, half the turbine hall and one reactor building had been nearing completion, while foundation work had only just been started on the second power reactor building and on the extension of the turbine hall. Thus we expected to find in the movie at Geneva three cooling towers operating with, perhaps, a spare in addition. Three turbines would thus generate 100

[2] See "Mission to Birch Woods," Studies Vol. 12, No. 4, p. 1

megawatts of electricity and dump three times 200 to 600 megawatts of heat through the cooling towers to yield an over-all thermal efficiency of 15 percent, rather than 22 percent. Had the Russians fibbed just a little bit?

Those reactor experts who had seen the film tended to favor the lower efficiency. The reactor looked like our earliest Hanford type, except the tubes were vertical instead of horizontal. They felt it was a reactor optimized for plutonium production, but producing by-product electricity, a so-called dual purpose reactor. The electrical efficiency of such reactors was known to be low and, indeed, no one reported the mention of a high pressure steam circuit, or had seen in the movie a high pressure end to the low pressure turbines. Eventually I settled the question on the number of cooling towers by visiting the last showing of the movie: there were four, one apparently installed ahead of schedule as a spare in case of a failure in one of the other three. The efficiency was almost certainly not 22 percent.

At the movie, I was reminded of Richard Kroeck's wish to walk around on the site. After spending five months photointerpreting the Tomsk photography, he had felt it would be like returning to a childhood home—and, of course, he really wanted to see how accurate his photointerpretation had been. My reaction was one of less familiarity. I simply did not recognize in the movie the main housing area with its imposing six-story apartment houses set back from the statue of Lenin on horseback and its large children's playground. The paved sidewalks and the planted grass and bushes in the reactor area bothered me also, for the ground there had been a construction shambles in the U-2 photography. Nevertheless, the reactor area seemed "right" and within seconds I had picked in my mind the spot from where the initial "shot" of the reactor complex had been taken. Compare Figure 1a, one of the 1958 movie frames later released by the Russians, with Figure 1b, the 1957 aerial view. The location of the camera in 1958 is marked with an "X" on the aerial photography, and the solid lines from the "X" show the angular view subtended by the frame from the 1958 Russian movie.

Within hours after the first showing of the Russian film reports began to come in—both from American technical information people and from more covert sources of information—that the Russians had no intention of letting the actual film of the movie out of their possession. We had learned that Dr. Vasilly Semenovich Yemel'yanov, the head of the Russian Delegation, had already privately asked Dr. Isador I. Rabi, the head of the US Delegation, for copies of all the US movies shown and had obtained the latter's acquiescence.

Under these circumstances, Dr. Reichardt felt that the US might not ever obtain copies of the Russian film. He obtained permission to press the US technical information staff to continue attempts to obtain copies of the film through exchange. In addition he enlisted the special services of a group of

reactor design engineers visiting the conference with whom we maintained liaison through John R. (Jack) Craig, also a staff employee of CIA's Office of Scientific Intelligence. The design engineers were employed by a US reactor-engineering firm under contract to OSI to produce an evaluation of Russian reactor engineering practices. Pointing them toward the Siberian power station seemed eminently reasonable. Craig soon brought back a detailed plan dividing up the functions of an atomic power station amongst the engineers so that each would be viewing and listening to the movie for very specific facets. In addition, they proposed taking still photographs of the movie with the two very fine Leicas and the exceptionally high speed film Craig and I had brought to Geneva.[3]

The plan was implemented. The engineers' notes were by far the best on what was seen and heard by all at the movie and they took many successful "in cinema" photographs. Eventually the Russians did release portions of the film; however, most of the sound track and many of the more interesting "shots" had been deleted. Only information collected at the movie showings in Geneva could cover these deleted items, and several of the "in cinema" photographs turned out to be crucial in the later analyses.

Meanwhile, we had been suggesting to AEC atomic power experts in the delegation that they should discuss technical details on the Siberian station with Russian reactor designers and with Russians manning exhibits in Exhibition Hall. A number of non-AEC American delegates had already been the recipients of questions in their particular fields served through CIA's Domestic Contact Service before they had left the continental US. These, we correctly felt, could be trusted to ask questions on their own initiative. Still others were carrying out situational gambits devised by their Air Force case officer, who in turn was in touch with us at delegation headquarters.

Much of what these contacts learned was later to be found in the printed technical papers, but some of it came to us in no other way. For instance, one source, a chemical engineer specializing in nuclear reactions, was told by a friend that Russia's S. M. Feinberg said "the reactor has two steam circuits, one operating at 180 degrees C, the other at 30 lbs. per square inch [sic]. The fuel elements are cylindrical tubes holding graphite moderator and the fuel elements themselves. The latter are cylindrical, 10 mm. internal diameter. Through them flows water. The fuel consists of uranium-magnesium, 0.7 mm. thick (presumably cladding thickness) and clad on both sides with aluminum." Source adds that his friend had language difficulties in understanding the fuel element description: he understood the fuel to be "compressed

[3]Despite my all too vocal insistence that it could not be done!

powder." Perhaps, powder metallurgy was used to obtain a uranium-magnesium alloy. Source was very surprised at this design, which was "quite different from our design."

Another source stated "the reactor has 20 control rods...which were identified by green squares on the 'map.' The control room has an illuminated panel for fuel channel temperature, and there is 'automatic replacement' of fuel by a key at the control panel.... Under the reactor there is a shielded two-man carriage or gondola for the servicing of mechanical difficulties at the discharge face...."

A third source stated "...the Soviets were asked directly (by a US scientist) where this reactor was located, but the question was completely ignored 'due to translation difficulties.' This reactor operates on natural uranium fuel elements clad with aluminum silicon (AlSi) alloy of 1-2 percent silicon content.... Since the AlSi alloy is good only to 200-250 degrees C, I asked the Soviets why they had selected this alloy and not an aluminum nickel alloy (which the Soviets had tested and found to be good to about 300 degrees C). They replied the aluminum nickel alloy absorbed too many neutrons...."

As one can see from even this limited sampling of reports, each observer found several things to comment on. In addition, there were differences in reporting on many points, and it was impossible to judge offhand what was crucial information and what was merely the expected. Only detailed analysis could answer questions beyond those obvious ones which we could and did pose in Geneva.

So, let us turn to the analysis that was performed in Washington after all the reports on Geneva had been published. The late Frank D. McKeon in CIA's Office of Scientific Intelligence started the analysis by spending hours examining the photographs from Geneva and the U-2 photography of the reactor area at Tomsk. In Manhattan District days during World War II, he had been a procurement officer specializing in the procurement of specialized equipment for the Hanford reactors. Reactor physics was beyond his training, but he thoroughly understood pumps, instrumentation, and safety. He decided the photographs of the reactor upper face, Figures 2a and 2b, and those of the three instrument "boards," Figures 4a and 4b, at the reactor control station supported one another: using the control panels, which were photographically clearer, he counted 20 control rods, 20 safety rods and 2,100 fuel rod positions. In the picture of the upper surface of the reactor (Figures 2a and 2b) each square with a "hole" in the center is positioned over four fuel rods like the one hanging down in Figure 2a. The objects with white tops that stick up like fence posts in Figure 2a are either control or safety rod activating mechanisms. From the appearance of the control rod drive mechanisms Frank concluded the Russians were using a motor and sheave to propel

two halves of a vertical control rod; that as one-half was drawn up out of the core into the top shield, the other half was dropped down from the lower half of the core into the lower shield. (His conclusion on the mechanics of the control rods has not stood the test of time, and it is probable that they are much simpler in construction.)

Having determined there were 2,100 fuel rods, there seemed to be a real chance of getting at the physical size and internal details of the reactor. The spacing between fuel rods, for instance, is diagnostic for it depends rather specifically on the type of reactor. For a dual purpose graphite moderated reactor—that is to say for a natural uranium reactor operating in the thermal neutron energy band—this value should be quite close to 8 inches, the variability being mostly due to how dense the synthetic, ultrapure graphite might be and on the physical dimensions of the fuel rods.

The Russians had not happened to mention any reactor dimensions, and it was characteristic of the photographs we had, and indeed of photographs in general, that one known dimension in each picture is needed before detailed measurements can be derived from them. Frank McKeon spent many hours looking for standard items whose dimensions were known. There were none.

Then the hours of staring at the photographs paid off. In one photograph, Figure 3a, there was a fuel element hanging down one wall next to the vertical beam between the first and second windows. Another picture, Figure 3b, showed the wall, the fuel rod, and an air vent in the wall (which looked like a square window) directly below the fuel element. Another (taken "in cinema") showed just the tip of the fuel rod, the air vent, the floor, and part of the reactor upper surface. A final one, Figure 2a, showed the reactor upper surface, the floor and the air vent. We had good (Russian) ground photographs of the exterior of the reactor building, Figure 6a, so the positions of the windows could be judged. And, most important, we had a measured aerial photograph of the reactor building "high hat."

We could get a usable measurement of the upper reactor face, and of the lattice spacing between fuel elements!

One problem remained. Which wall were the windows in? The windows (Figure 6a) in the front, or west, wall of the reactor building "high hat" were visibly closer together than those on the south wall. After much study, Frank McKeon realized that the highlights and the shadows on the wall with the "important" fuel element, Figure 3a, probably were caused by sunlight, rather than by banks of floodlights like those visible in the picture. Floodlights would not be placed to give downward sloping shadows. Furthermore, assuming sunlight was the cause, there is no way to get sunlight shining toward the south at 57 degrees north latitude. It must be a late afternoon sun shining through a west window onto a north wall. In confirmation of this

conclusion, the reason the window on the far right of Figure 3a was not readily apparent was because none was in fact there. The aerial photograph showed a square tower elevated 20 feet above the general building roofline on the northeast side. Frank reasoned this was where the emergency reactor cooling water was stored and that it simply blocked where the windows on the eastern half of the north wall would have been placed. So there was quite adequate evidence that the "important" fuel rod was on the north wall.

The measurements branch of what is now the National Photointerpretation Center (NPIC) was now in a position to make the needed measurements. Recognizing that there were five windows on the south wall and, judging from the interior photographs, such as Figure 3a that there was space for seven heavy vertical steel beams, one between each window and one at either end, the length of the "high hat" would be seven beam spacings plus walls and eaves. Assuming six feet for each wall and eave combination, seven beam spacings would be the 126 feet judged from aerial photographs less walls and eaves, or 114 feet (34½ meters). So, the heavy vertical members on which the heavy-lift traveling crane rests were probably spaced at 5 meter or 16½ foot intervals. Recognizing that the "important" fuel rod was somewhat to the left of the third vertical beam while the interior wall surface was to the right of the inner edge of the first beam, NPIC settled on 29 feet for the distance between the corner and the fuel rod.

Working from photograph to photograph, NPIC then derived the measurements given in the illustrations by using standard photomeasurement techniques derived from projective geometry. The reactor turned out to be 37 feet across, with its circular edge 20 feet from the north, west, and, presumably, south walls. Allowing 12 feet for walls and eaves, the building would be 89 feet across, thus agreeing with the 89 feet width derived from aerial photography, a most gratifying check on the methodology. Space was provided toward the eastern wall where heavy objects such as top shield sections could be set down by the crane, should major repairs be required. The 26 square blocks across the reactor face were each 1.42 feet across. To get 2,100 fuel rods in the space given, four fuel rod positions would be needed per square block. In a "square lattice" configuration, the distance between fuel rods would be 0.71 feet or 8½ inches: close enough, considering the precision of measurement, to the 8 inches value expected for a graphite moderated natural uranium reactor!

While waiting for the NPIC measurements to be made, Frank tackled the problem of fuel rod construction. First he looked for some way to measure how long they were. This failed. There were no pictures available showing the tops of the fuel rods and, thus, no way to get a specific measurement of their length. However, he did conclude from Figure 3a and Figure 1a that if the top

of the reactor were at the second story floor level, the rods would have to be somewhat more than 52 feet long.

Then he noticed in one of the "in cinema"[4] photographs that there was a close up of the control rod indicator panel. Each control rod had a gauge in the same position on the panel as the control rod had on the upper reactor surface. The gauge reporting control rod movements on the reactor control panel (upper left in Figure 5a) had a maximum value of 7.5 meters, or 24½ feet. The difference between the fully in and fully out positions of a control rod is the length of the active core in a reactor. He had determined that the core of the Siberian power reactor was a vertical cylinder 37 feet in diameter and 24½ feet high!

Knowing that the fuel in the 2,100 fuel rods was about 24 feet long and assuming that the Russians were, in fact, being truthful about the reactor being loaded with 200 metric tons of uranium metal, Frank was able to calculate fuel diameters. These came out as 1.18 inch diameter for the uranium alone if the uranium in the fuel rod were a solid cylinder, and 1¼ inch diameter if the fuel rod had one centimeter hole in the center as suggested earlier in the quote from a DCS source. Frank knew that these shapes and diameters were in excellent agreement with ones then in use in the several Hanford reactors, thereby adding fuel to the concept that the Siberian reactor was a plutonium production reactor modified for dual purpose usage.

Frank also thought it important that there was as much instrumentation on the Siberian reactor as there ever was on the ones at Hanford. The Russians were measuring temperatures, pressures, and flow rates. They were taking no chances that something might go wrong unnoticed. Some of the instrumentation was very bulky compared to ours and awkward to monitor just because of its sheer size. The shot of one of the temperature or pressure recording panels (Figure 5b) is a good illustration. At an American reactor, this enormous installation would be a panel merely 8 feet by 10 feet. But the American installation would do no more, and might not be quite as reliable. So went the old myth that the Russians were sloppy people who did not care who got hurt in their heedless, inept race for nuclear weapons.

At about this point in the analysis, Frank McKeon was transferred to the burgeoning problem of atomic energy in China. Responsibility for analysis of the Tomsk Reactor Area was passed to Jack Lundin, a physical chemist with reactor physics training.[5] Jack called on Charles Reeves[6] to help him identify

[4]The "in cinema" photographs have not been reproduced because of their lack of sharpness, a result of the adverse conditions under which they were taken.

[5]See "The Red Nautilus," Studies Vol. 11, No. 2, p. 59

[6]See "How to Decrypt a Picture," Studies Vol. 11, No. 3, p. 41

uniquely the electric power generators and handling equipment visible in the Geneva movie.

Charlie had been collecting Russian books and periodicals on electric power generation for years, and he read technical Russian fluently. First, he noticed in an "in cinema" photograph that the windows behind the turbines were placed equidistant between roof beams, and, presumably, vertical members. Knowing from drawings in the literature that the Russians used 6 meter beam spacing in generator hall construction, he was able to give NPIC an accurate distance on the best photography of the interior of the turbine hall. After checking this assumption against the 1957 aerial photography of the incomplete turbine hall, NPIC in turn was able to give him quite accurate dimensions on the turbines.

Charlie then spent days hunting up engineering drawings of Russian turbines, starting with his five-shelf library. The Leningrad VK-100-2, 100 MW turbine, shown on page 327 of "Energetecheskoe Stroitel'stvo SSSR Za 40 Let," which he fortunately possessed, or the Leningrad SVK-150 MW turbine, shown in the same anniversary volume, did not resemble the Siberian turbines, Figure 7a, at all closely. The Kharkov KhTGZ type PVK-150 was more like the turbine in the Siberian station in pattern, but it did not have a flared base nor manholes low on the side. He hunted further. On page 46 of the journal "Elektricheskie Stantsii" for November 1957, he found a picture of the low pressure end of the Kharkov KhTGZ type VKT-100 turbine which was what he was looking for. The inlet steam temperature would have to be about 108 degrees C. at 1.36 atmosphere pressure. Steam flow would be 298 metric tons per hour to yield 32 MW of electricity. There was no sign of a high pressure end to the turbines in the pictures of the Siberian station. Station efficiency must indeed be 14 percent, not the 22 percent stated by the Russians.

These values on turbine operation were of great importance. They bore directly on the possible power levels of the reactor and on the range of likely flow rates in the primary cooling circuit through the reactor, both prime factors in defining the 1958 status of Russian reactor technology. Jack and Charlie compared the photographs and the technical drawings of the VKT-100 turbine exhaustively. They matched bolt to bolt, hatch to hatch, dimension to dimension. They made sure the cooling towers would dissipate 200 MW of heat. They checked the transformers (Figure 7b) to be sure they were a compatible size. All the pieces were consistent with one another.

Two additional facts were available. First, the published papers from Geneva confirmed the maximum fuel rod temperature of 220 C. reported by a DCS source. Secondly, the 1957 U-2 photography of the dual purpose reactor under construction showed an effluent line from the main reactor

pumphouse: the dual purpose reactor was designed so that hot water could be pumped round and round through the reactor; or alternatively cold water could be pumped into the reactor, heated there, have its temperature reduced in the steam generators to near the boiling point, and then discharged to the effluent line after mixing with a bit of cold water.

Taking both these additional facts into account provided unique answers: the flow through the reactors should be about 42,000 gallons of primary circuit cooling water. If operated so the primary circuit recirculated through the main pumphouse (see Figure 6b), the reactor would produce 700 MW, of which 100 MW was turned into electricity and the remaining 600 MW was discharged through the four cooling towers. If the primary circuit water was discharged as steaming hot water into the effluent channel, the reactor power level would be 1,700 MW—and plutonium production would be correspondingly large; electrical production would remain at 100 MW, and the cooling towers would steam off 600 MW as in the closed cycle case. Truly the Siberian reactor was designed to produce plutonium and a bit of by-product electric power.

This, then, is the story of how we had been able to collect the pictures, the technical papers, the intelligence reports from the Second Geneva Conference on the Peaceful Uses of Atomic Energy and deduce from them with very great precision indeed the technical characteristics of Russian plutonium production reactors—one of the great "military" secrets of the USSR.

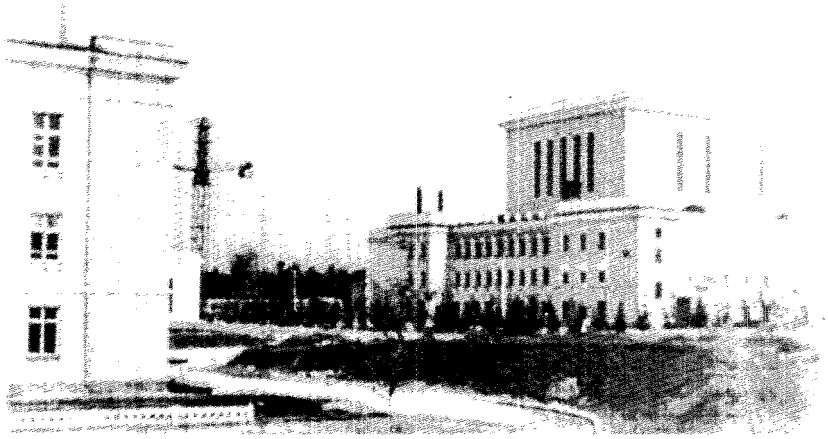

Figure 1a. Building housing reactor (right) and electric power house (left) of electric power station

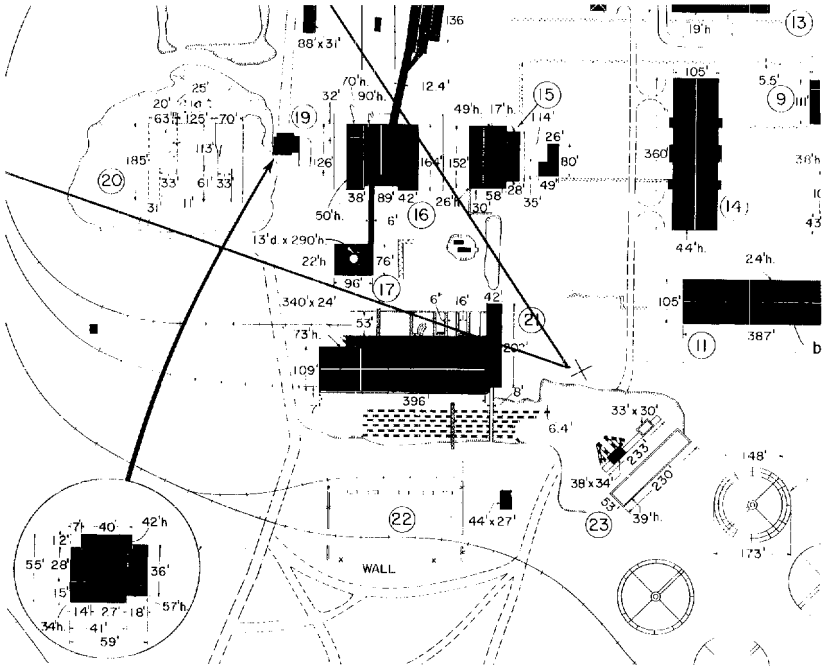

Figure 1b. Drawing from U-2 photograph of reactor area

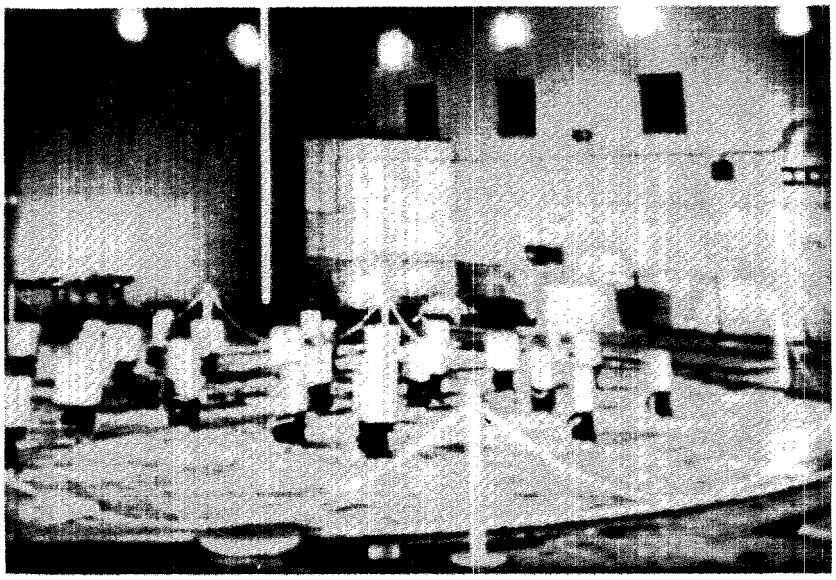

Figure 2a. Reactor room, atomic energy installation

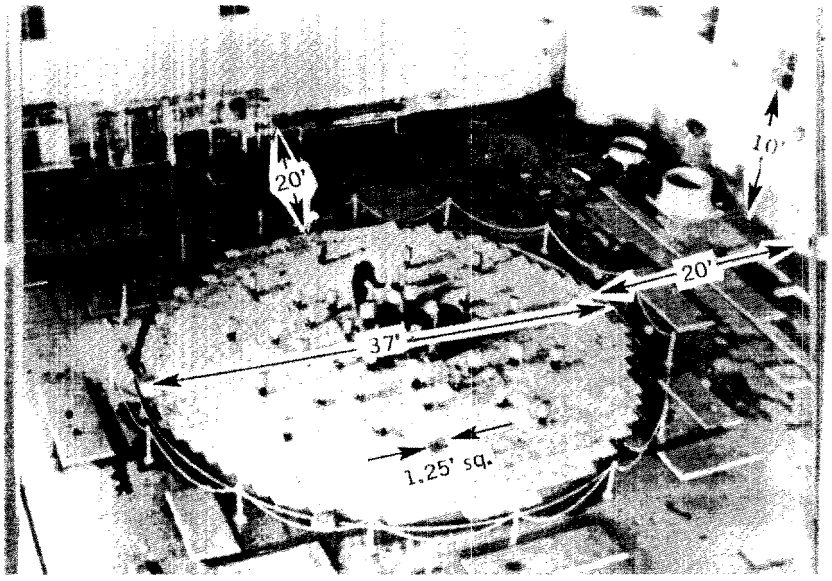

Figure 2b. Reactor of atomic electric power station of 100,000 kw capacity.

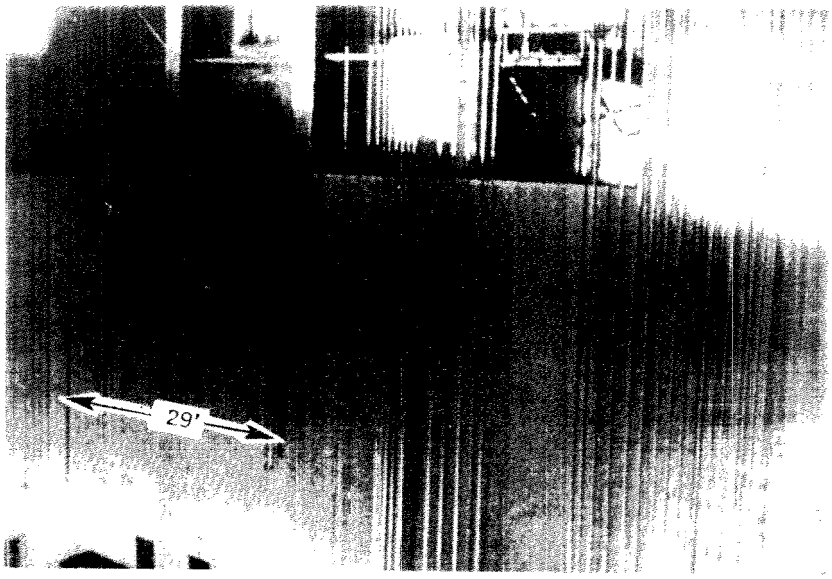

Figure 3a. Room housing reactor in 100,000 kw atomic electric power station

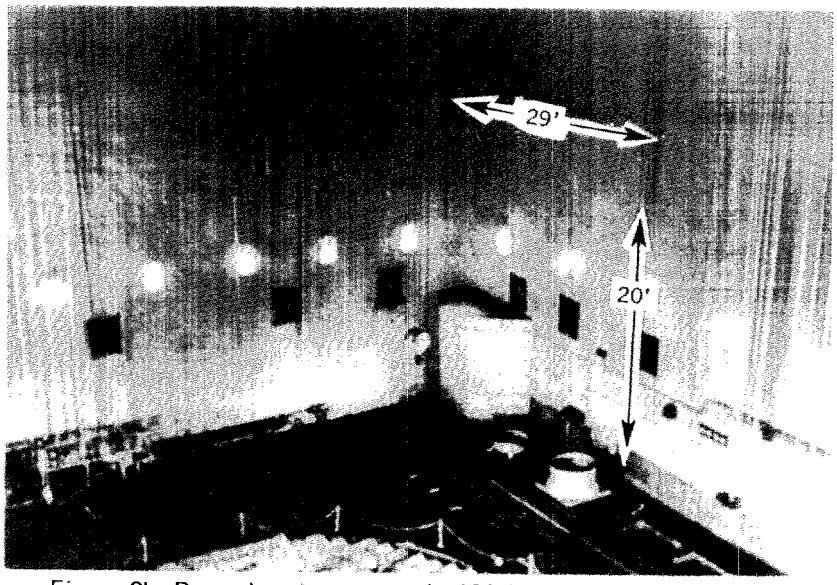

Figure 3b. Room housing reactor in 100,000 kw atomic electric power station showing reactor top surface

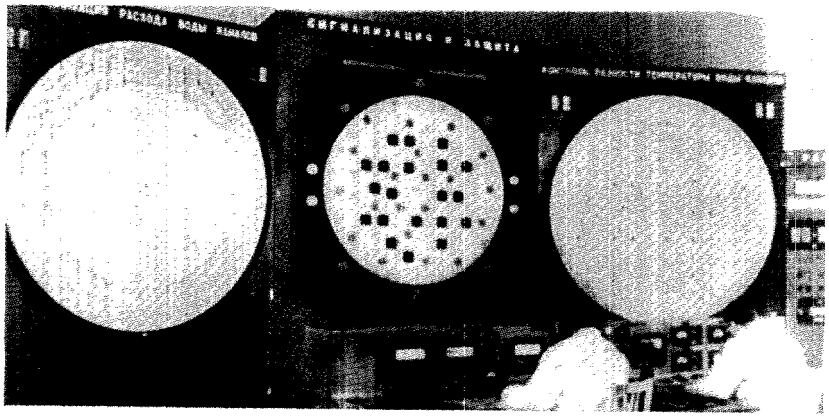

Figure 4a. Control point of reactor at atomic electric power station

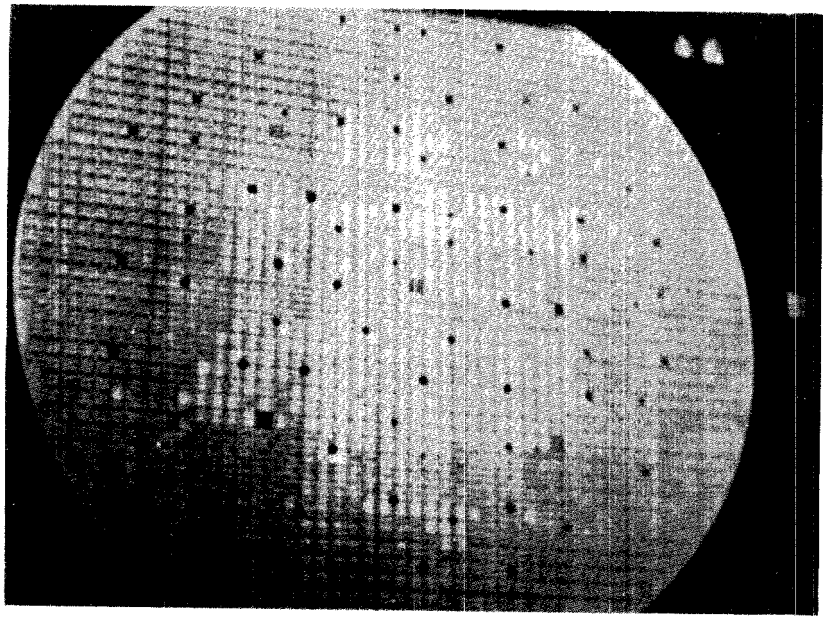

Figure 4b. Enlargement of control panel at atomic energy installation

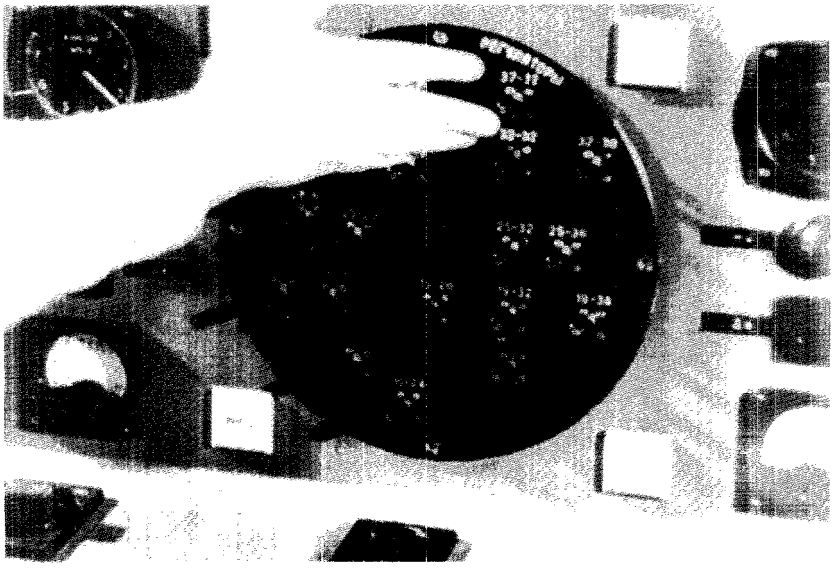

Figure 5a. Mechanism for regulating hoists of reactor control rods in 100,000 kw. atomic electric power station

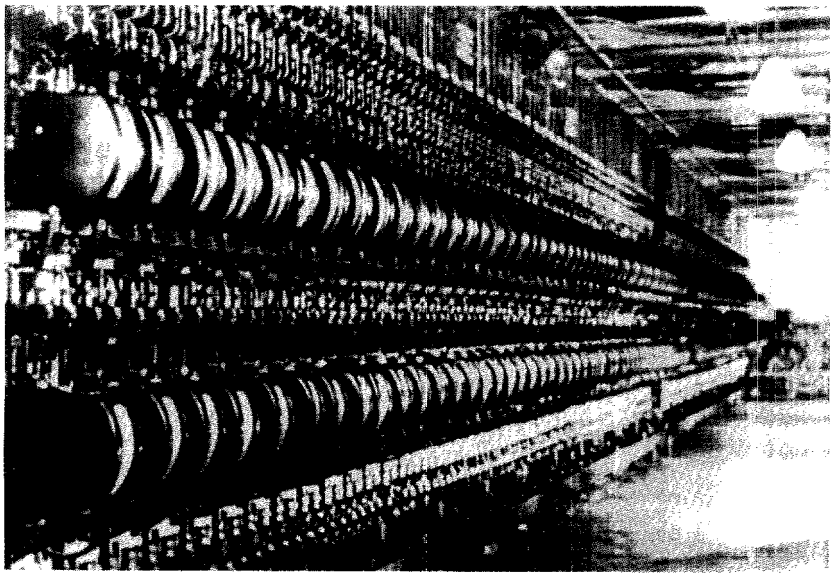

Figure 5b. Interior view of building which houses reactor of atomic electric power station showing control instrumentation

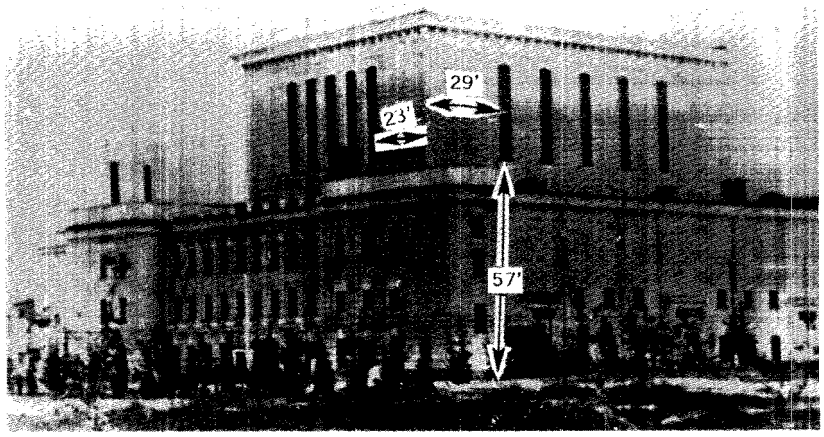

Figure 6a. Atomic electric power station of 100,000 kw capacity. Full capacity of station will reach up to 600,000 kw.

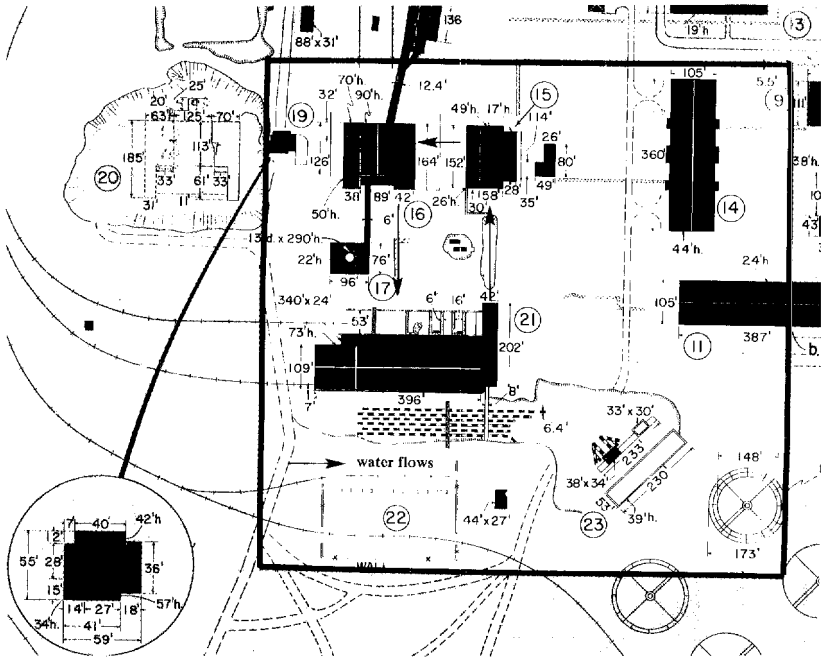

Figure 6b. Reactor area showing closed loop water flow option

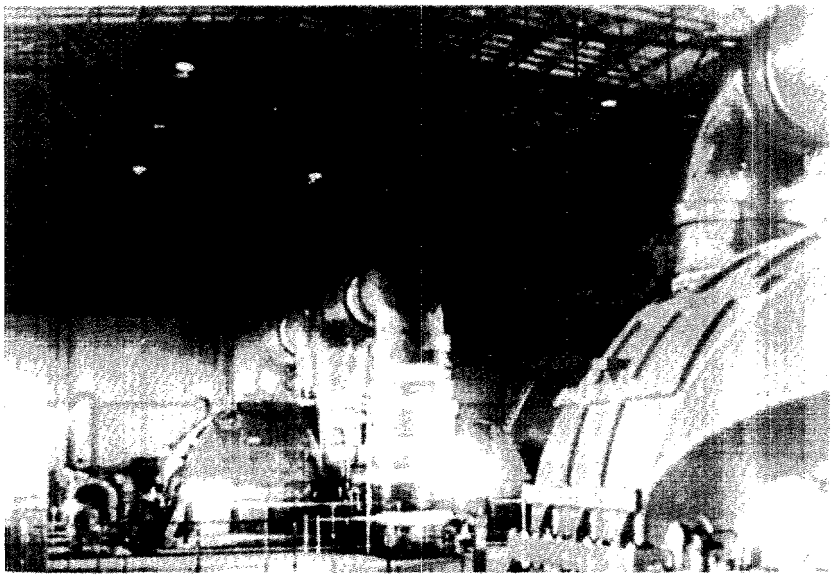

Figure 7a. Power house installations in atomic electric power station

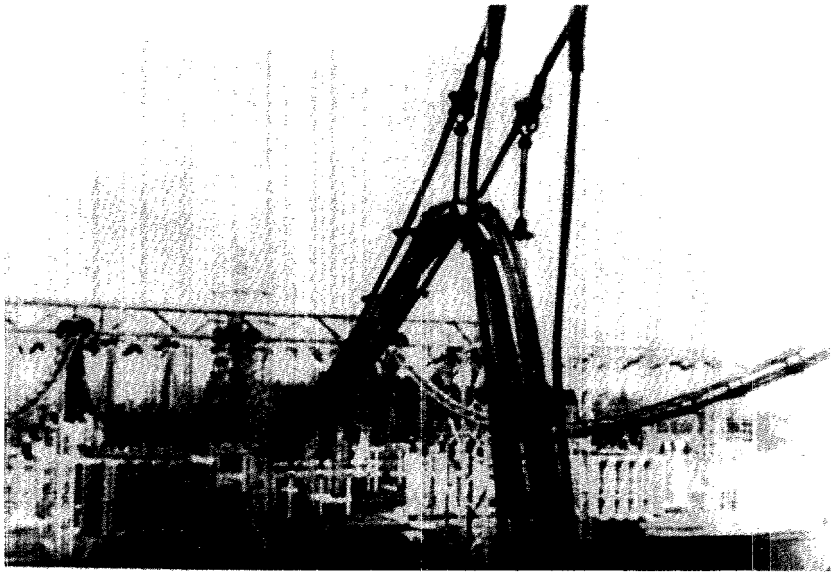

Figure 7b. Transformer station of power house at atomic electric power station

The evolution of photogrammetry[1] *within CIA*

WHAT SIZE IS IT?

Ralph S. Pearse

Man has been interested in the size of things since earliest time. The need for his knowing the size of objects has changed with the evolution of man himself. Primitive man, for instance, needed to know if a tree was tall enough, when felled, to use as a bridge across a stream. As time passed, he needed to know the height of an enemy fortress wall in order to build ladders long enough to scale the wall. Today, the intelligence analyst's need for measurements is of a drastically different nature. Even more significant is the high degree of precision now required.

The development of photogrammetry in this country began shortly after World War I. During the war, the Germans demonstrated the strategic importance of aerial photography. This was reiterated in November 1938 by General Oberst Baron Werner von Fritsch, chief of the German General Staff, who said, "The nation with the best photointerpretation will win the next war." Fortunately, the United States was well prepared to conduct aerial reconnaissance when World War II broke out. In the Pacific theater, 80 percent of all intelligence was obtained from aerial photographs. The history of aerial photography during World War II would require many volumes. Following the allied victory, however, little was accomplished in applying photography to peace time intelligence activities until the early 1950s when CIA activated a vigorous program to develop photography as a source of information.

To exploit intelligence information from photography, the Agency created the Photo Intelligence Division, Geographic Research Area/ORR in 1952. When something of interest is seen in a photograph, two questions are asked almost simultaniously: What is it? What size is it?

By mid-1955, a separate branch, composed of photogrammetrists,[2] was formed to answer the "size" question. In the branch's early days, relatively

[1] Photogrammetry—The art, science, and technology of obtaining reliable measurements by means of photography.

[2] Specialists with a strong mathematical background and trained in photogrammetry.

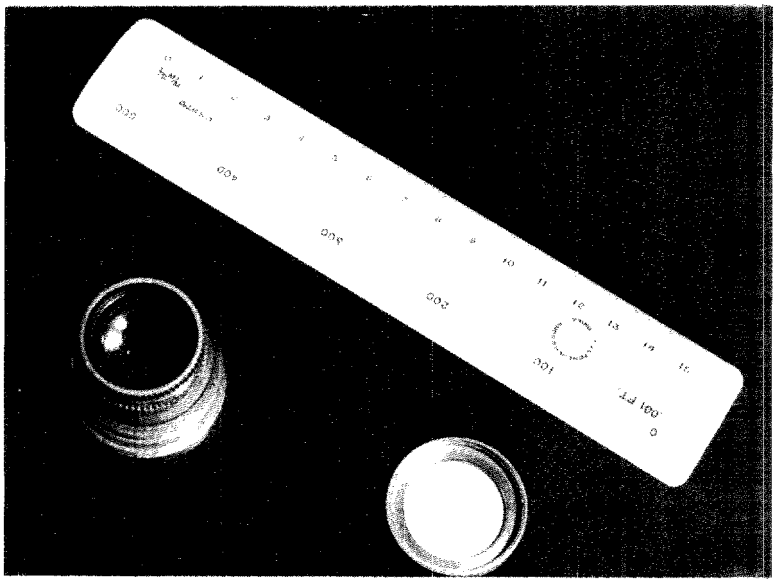

FIGURE 1. Scale and magnifier with measuring reticle

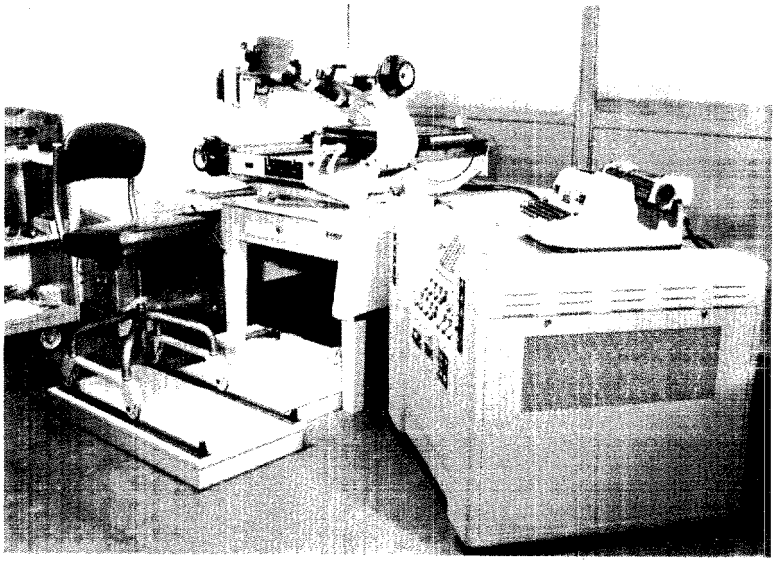

FIGURE 2. Mann Comparator Type 621

crude dimensions were produced using very simple equipment. The equipment available consisted of boxwood scales and tube magnifiers with etched reticles (Figure 1). Computations were performed by slide rule and, when luxury afforded it, a desk calculator. Measurements were usually confined to the length and width of buildings or the distance between objects.

Other intelligence organizations, such as the Air Force Foreign Technology Division (FTD) and the Navy Photographic Interpretation Center (PIC), had also established photogrammetric capabilities. FTD was concerned with determining the performance capability of Russian aircraft and the Navy with submarines and shipyards. They used time honored graphic methods in extracting dimensions from photographs. Such methods were laborious and posed many limitations. Benefiting from Air Force and Navy experience, CIA photogrammetrists soon realized these limitations. Consequently, they turned to analytical methods which were just then being explored and which offered much greater potential.

As the Photo Intelligence Division grew from a mere handful of people to more than 40 persons, it moved from "Q" Building to the Steuart Building in July 1956. Shortly thereafter, more precise measuring instruments, called

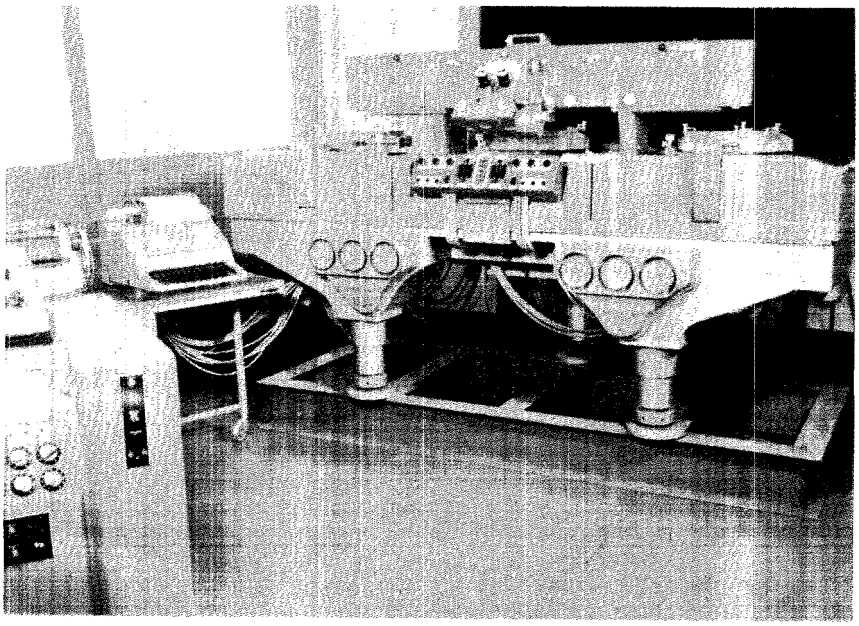

FIGURE 3. Nistri Stereocomparator TA-3

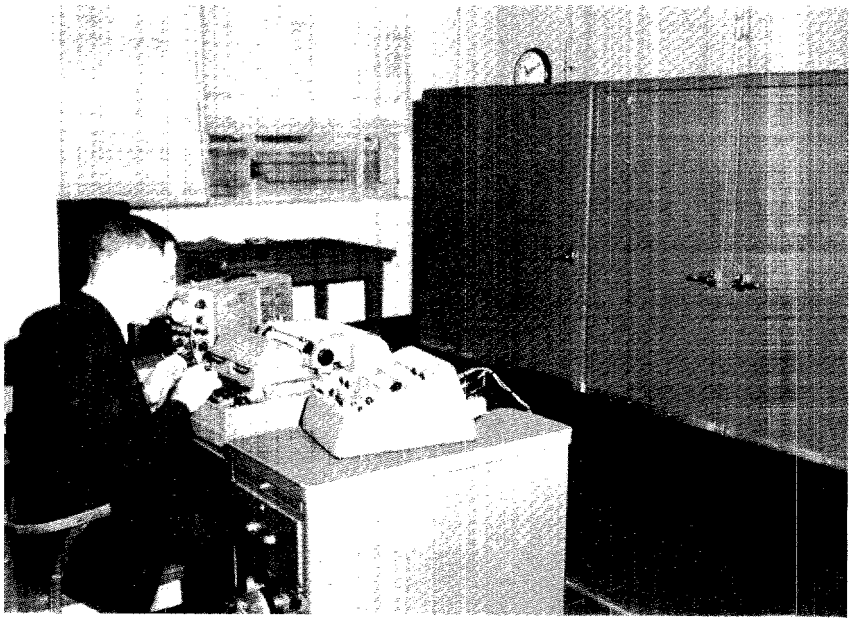

FIGURE 4. ALWAC III E Computer

comparators,[3] were acquired, such as a Mann 621[4] and a Nistri TA-3[5] (Figures 2 and 3). Comparator coordinate measurements were read from dials and hand recorded. Calculations were still performed by the use of desk calculators. In September 1957, a small digital computer was acquired to aid in handling the increasing volume of measurement requests and demands for more complex measurement computations made possible through analytical methods. This computer, an ALWAC IIIE, was the first computer in the Agency (Figure 4). Simultaneously, encoders[6] were installed on the comparators and electronic auxiliary equipment was added to convert the

[3] A comparator is a precision instrument that measures X and Y coordinates of a photographic image. A monocomparator measures from only one frame of photography. A stereocomparator permits the viewing of two overlapping frames of photography, thereby seeing the object in three dimensions, and measuring the X and Y coordinates of both frames, usually permitting a more accurate solution.

[4] A particular model of a monocomparator manufactured by the David W. Mann Co., Mass.

[5] A stereocomparator manufactured by OMI-NISTRI, an Italian firm.

[6] A device that senses the amount of movement of the comparator measuring system.

encoder output into digitized form. These additions permitted image measurements to be automatically recorded on punched paper tape, which in turn could be read by a flexowriter for direct entry into the computer. Thus, the computer, combined with automated instrument readout, opened the door to faster computations on a volume basis. Measurement of dimensions other than length and width was now feasible.

Many interesting and challenging measurement problems were tackled in the formative days which influenced the growth and pattern of mensuration capability development. These problems ranged from measurement of the diameter and depth of craters at Semipalatinsk in determining the magnitude of nuclear test blasts, to measurement of crates on ship decks in postulating the contents, to the geodetic location, orientation and measurement of the herringbone SAM sites ringing Moscow. Such measurements proved the value of dimensional information in analyzing the Sino-Soviet military posture and potential. The varied scope of requirements for measurements—distances, heights, areas, azimuths, contour maps, profiles, and geodetic positions—strengthened the decision to develop analytical methods and automated instruments.

When the National Photographic Interpretation Center was formally chartered on 18 January 1961, it included a division devoted exclusively to mensuration. The division was responsible for providing measurements and developing mensuration techniques and instruments. NPIC photogrammetrists recognized that the type of photo measurements required for intelligence purposes was unique and that precision measuring instruments had to be developed for this purpose. Until this time, off-the-shelf instruments were used. Many of these instruments were designed for the compiling of maps from photography and were not adequate for meeting intelligence requirements. NPIC, therefore, initiated an instrument development program. The significance of precise measurements was dramatically portrayed during the 1962 Cuban missile crisis when dimensions were crucial in analyzing the threat and influencing decisions.

On 1 January 1963, NPIC moved into its present quarters in Building 213 in the Naval Weapons Plant. Several significant improvements in NPIC's mensuration capability occurred at this time. The small ALWAC IIIE computer was replaced with a UNIVAC 490 real-time computer (Figure 5). The speed and capacity of this computer were several magnitudes greater than those of the ALWAC IIIE. A specially designed instrument area with environmental control was built to house the increasing number of precision measuring instruments acquired through NPIC's R&D program. Cables were installed from the computer site to each of the instrument rooms so that eventually all

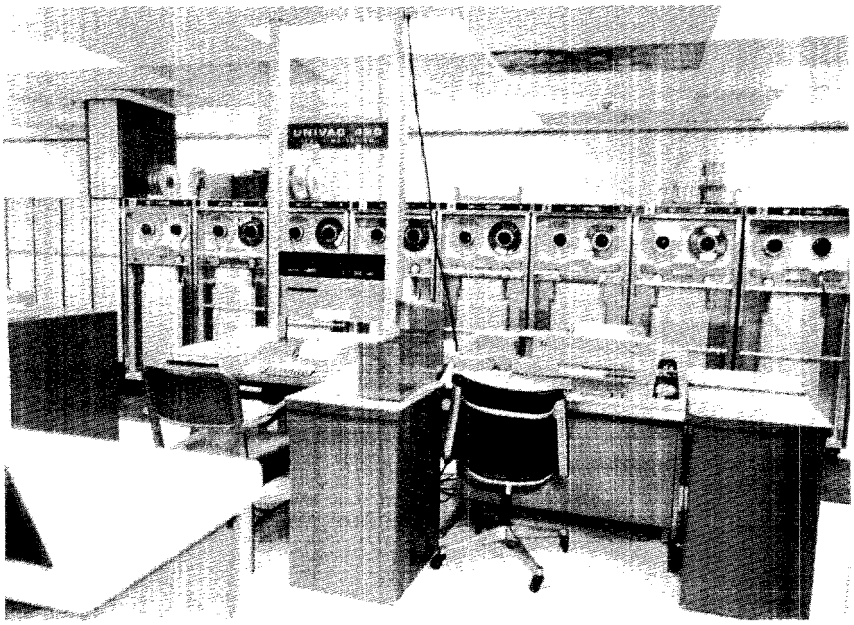

FIGURE 5. UNIVAC 490 real-time computer

instruments could be operated in a real-time mode, on line[7] with the computer.

Recruiting qualified photogrammetrists has been a major problem in realizing the full potential of NPIC's ability to answer the question–what size is it? The number trained each year by the few American universities that offer instruction in photogrammetry is far below the needs of government and industry. To acquire the photogrammetrists it needed, NPIC has built up a small but competent cadre of specialists by hiring persons with a mathematics or engineering degree, or with equivalent scientific background, and training them in the fundamentals of photogrammetry. Its extensive training program includes contracts for college level courses taught at the Center and sponsorship of selected individuals for a year of graduate training. NPIC's unquestioned leadership in photogrammetric talent, mensuration instruments, techniques, and accuracy attests to its farsightedness and the photogrammetrists' dedication in constantly seeking improvement.

[7]The comparator is connected by a cable directly to the computer permitting instantaneous transmission of image coordinates to the computer which makes the necessary computation and sends the answer back to the photogrammetrist within seconds.

Occasionally, NPIC's measurements have differed significantly from those provided by other organizations. Consultations and exchanges of ideas to resolve these differences have benefited both NPIC and the other organizations. In most cases, NPIC has successfully substantiated its figures. Such conflicts have strengthened confidence in the dimensional data NPIC produces and further inspired progress in improving its mensuration techniques.

As the quality of photography improved—permitting interpretation of greater and greater detail—a parallel demand for measuring this detail occurred. NPIC's mensuration capability in both techniques and instrumentation (Figures 6 and 7) has kept pace with this demand for greater detail and accuracy. Today, most instruments are operated in a real-time mode. The UNIVAC 490 computer has been replaced by two UNIVAC 494 computers. (The computers serve other automated data processing needs besides mensuration computations.)

Additional stereo measuring instruments (Figure 8) are being acquired to supplement existing instruments (Figure 9) to meet expanding requirements for vertical as well as horizontal dimensions. The measurement of heights, areas, azimuths, geodetic positions, and slopes, as well as compilation of contour maps, is now commonplace along with determining length and width dimensions.

In addition to routine requests for the dimensions of objects, the photogrammetrist is frequently tasked to answer unusual questions. Such projects have included identifying an individual in a photograph by means of ear measurement;[8] determining the time of day a photograph was taken by measuring the azimuth of shadows; and proving a photo has been faked or doctored[9] by comparing the scale and relative position of various objects in it.[10] All cases of determining a doctored photograph are not as obvious as the one appearing in a recent issue of Life Magazine[11] (Figures 10 and 11). The SA-2 missile shown in Figure 12 is known to be 35.6 feet in length. However, in relation to the soldiers, the measured length of the missile as pictured is found to be much greater than 35.6 feet.

Some problems have taxed the ingenuity of the photogrammetrist, such as the request to determine the dimensions of a submarine photographed in the open sea (Figure 13). There appeared to be no means for determining the angle from which the photograph was taken or a scale to use. A solution was

[8] Studies XIII 2, p. 71

[9] A photograph that has been altered to deceive or present false information.

[10] Studies XIII 1, p. 57.

[11] Life Vol. 68 No. 15, April 24, 1970 p. 81.

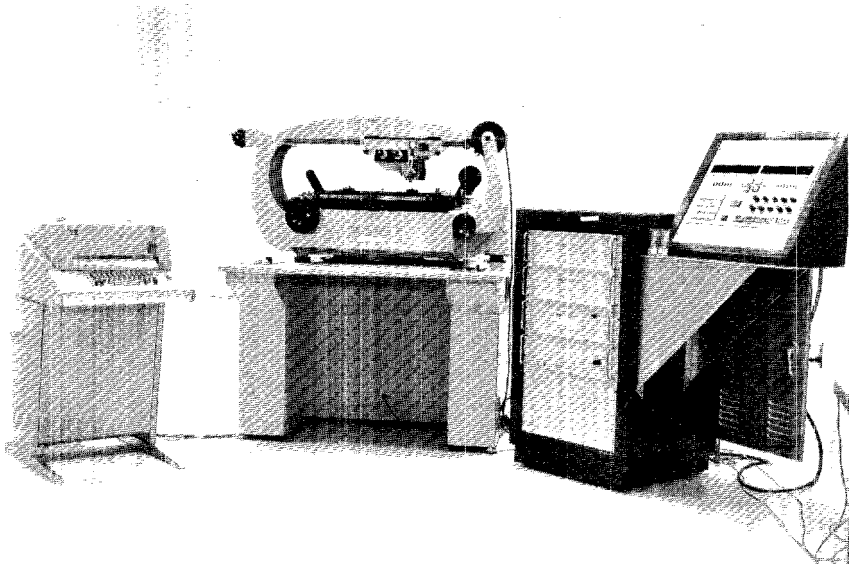

FIGURE 6. MANN Comparator Type 1210

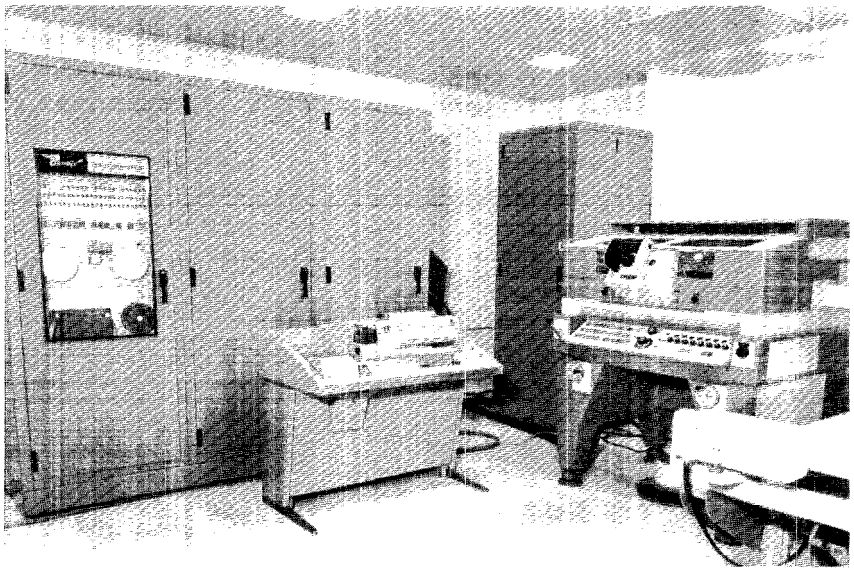

FIGURE 7. Nistri-Bendix AP/3 analytical stereoplotter (a special purpose instrument primarily used to compile contour maps and terrain profiles).

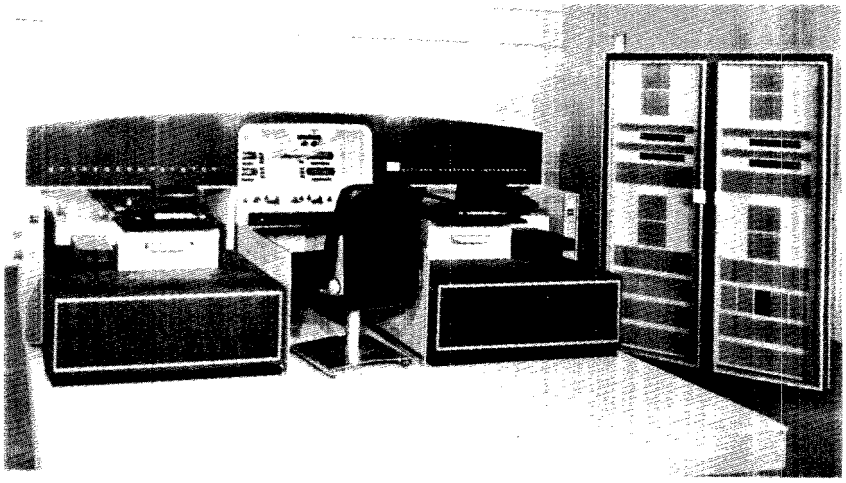

FIGURE 8. High-precision stereocomparator developed under NPIC R&D program and currently being manufactured by Houston Fearless Corp. Calif.

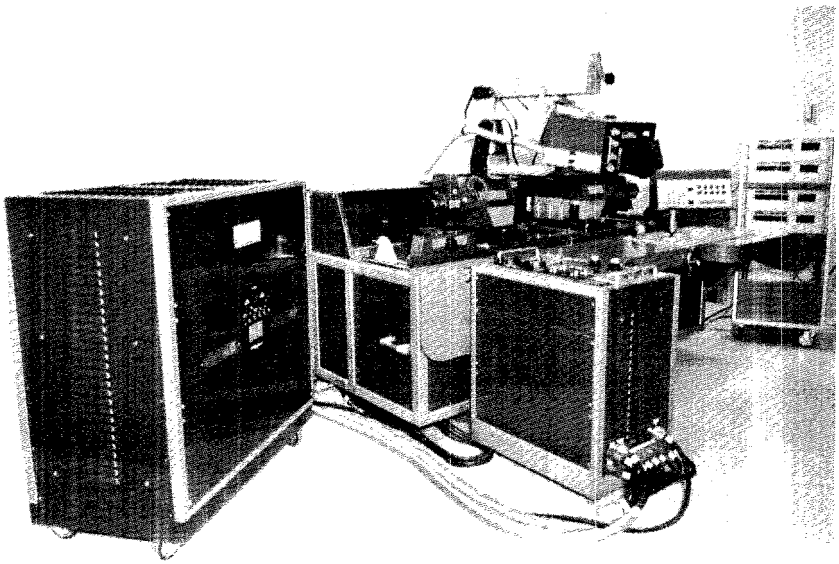

FIGURE 9. OPTOmechanisms stereoscopic point transfer device (a stereocomparator manufactured by OPTOmechanisms, INC., L.I., N.Y.).

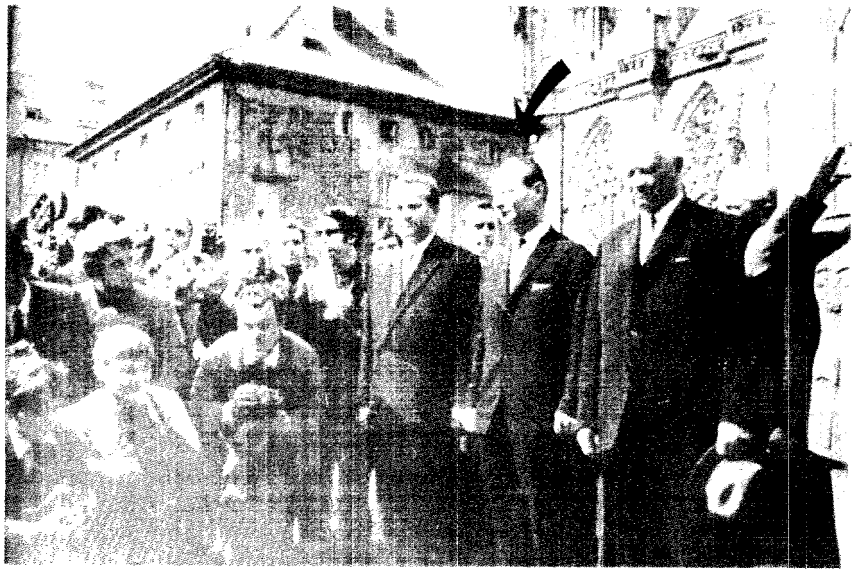

FIGURE 10. Czech News Agency photo released in 1969

FIGURE 11. 1970 release with Dubcek removed

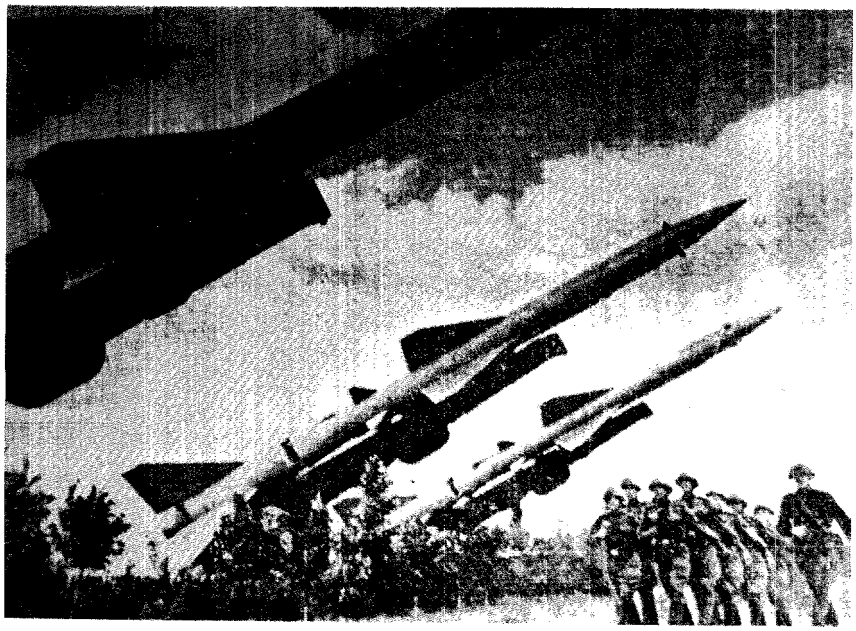

FIGURE 12. SA-2 missiles

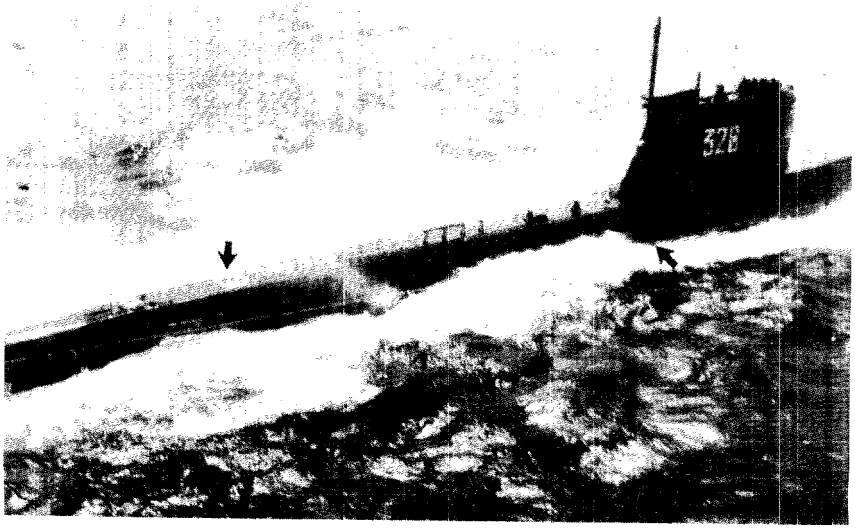

FIGURE 13. Soviet F Class submarine

achieved by measuring the distortion of the seating ring for underwater rescue, which was known to be a circle, to obtain the angle and using the spacing of depth marks for a scale. From such challenging tasks, NPIC photogrammetrists have gained invaluable experience enabling them to answer almost any measurement request.

For several years, considerable effort has been devoted to improving the means for exploiting terrestrial[12] photography, such as obtained by attachés and tourists. Outstanding success has been achieved in this area of photogrammetric analysis. One noteworthy example is the technique for determining the three-dimensional shape of an object from a series of photographs taken at different angles and including pre-established measurements in the background. In a test of NPIC's ability in this field, a guideline missile photographed in the November 1967 Moscow parade was measured. The dimensions NPIC obtained were later compared with steel tape measurements of a captured missile. NPIC's measurement of the length of the 35-foot missile was in error by only 0.3 feet.

In his job of providing measurements, the photogrammetrist sometimes finds himself engaged in photointerpretation. In measuring a Guideline Mod 4 surface-to-air missile, a photogrammetrist discovered that dimensions of two of the the four sustainer wings were different (Figure 14). This discovery indicated a radical departure from standard design for the USSR or the U.S. Photographic interpretation had not uncovered this fact; only when measurements were made was it revealed. Previous measurements of a Guideline Mod 1 SAM (Figure 15) were checked to determine if a mistake had been made or whether the fins of the Mod 1 were indeed identical. The fins were found to be identical as originally measured. When the asymmetric finding on the Mod 4 was presented for aerodynamic study, it was determined that the USSR had made a breakthrough, for greater stability was attainable with this design.

Today, CIA relies heavily upon photography as a source of intelligence information. NPIC is well equipped to measure what is photographed, and it is continually striving to improve the degree of accuracy attainable. To obtain precise dimensions, reliable camera and parameter data [13] are as necessary as

[12] Photography obtained by hand held cameras, usually taken at ground level looking in a horizontal direction as opposed to aerial photography obtained by a large camera mounted in a fixed position in an aircraft looking down on an object.

[13] Camera and parameter data provide information about the camera and the camera's location and orientation at the exact instant a photograph was taken. This data includes such information as the type of camera, focal length of the lens, accurate location of the camera, the direction the camera was pointed, and distance from the subject being photographed. For an aerial camera mounted in an aircraft, this data should provide altitude above the ground, the direction and angle (pitch, roll, and yaw) the camera was pointed in reference to the vertical, the direction the aircraft was headed, etc.

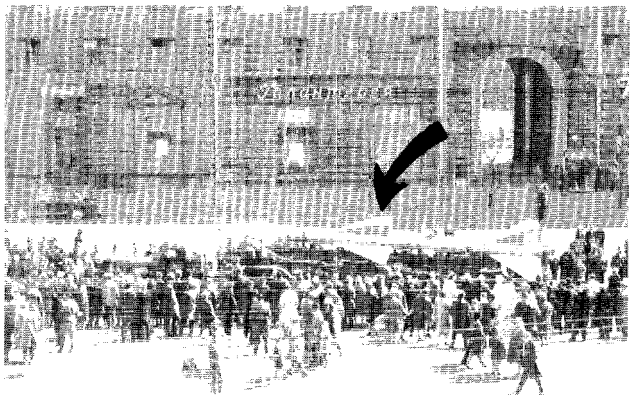

FIGURE 14. Guideline MOD 4 surface-to-air missile

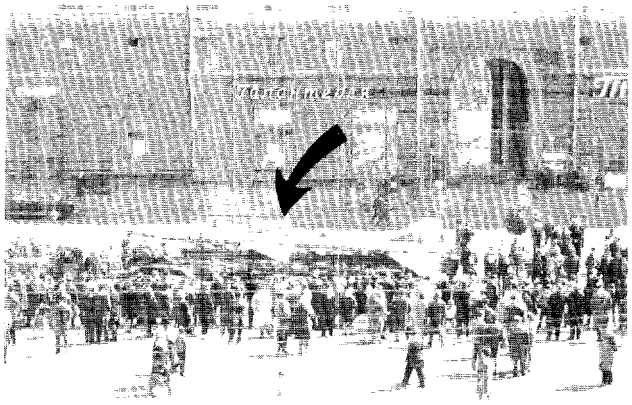

FIGURE 15. Guideline MOD 1 surface-to-air missile

a "good looking" photograph. The problems involved in precision measurement to micrometers,[14] from present-day imagery can be envisioned when one realizes that a human hair is 15 to 20 micrometers in diameter. Knowledge gained in studying these problems is being applied to instrument design, revised mensuration techniques, and new concepts in the continual evolution and expansion of NPIC's capability to answer the perennial question–what size is it? Lord Kelvin, the renowned British scientist, said, "When you can measure what you are speaking about and express it in numbers, you know something about it."

[14] One millionth of a meter or approximately 1/304,800th of a foot.

Intelligence and the law of executive privilege

UNITED STATES v. HARRY A. JARVINEN

Lawrence R. Houston

The first involvement of the Central Intelligence Agency in a major court case occurred in 1952. This was the heyday of Senator Joseph McCarthy, and the case itself arose at least in part from the atmosphere of the McCarthy era.

A man named Harry A. Jarvinen, who worked for a travel agency in Seattle, Washington, had for some time been an informant to the Seattle Contact Office, giving useful information about travelers of interest to that office. In early June 1952 Jarvinen informed Miller Holland, the head of the Seattle Contact Office, and Wayne Richardson, a member of that office, that an attorney in Seattle, one George Kahin, had booked passage for Owen Lattimore to Moscow and return. Jarvinen gave details as to the dates and itinerary and said the tickets had been paid for and forwarded to Lattimore.

On the face of it, this does not sound like very exciting intelligence. However, prior to that time Senator McCarthy had charged that Owen Lattimore was "The top Soviet espionage agent in this country." While the charge was never substantiated, it received a lot of publicity. The Seattle office realized that the activities of Professor Lattimore and the allegations about him were internal security matters and, therefore, referred Jarvinen to the Federal Bureau of Investigation's office in Seattle, where he told the same story. In view of the general publicity about Professor Lattimore, the Seattle Contact Office reported the matter to headquarters purely for information. Again, because of the general interest in the subject, the Chief of the Contact Division sent the report of Lattimore's trip to the Department of State "as a matter of possible interest." State was dubious about the professor's travels as he had not applied for a current passport and it asked for more details. At this point Jarvinen said the attorney had come back to the travel agency, had returned Lattimore's tickets, and received a refund. He said Lattimore had canceled the trip because of the unfavorable publicity it would entail.

Shortly thereafter the story hit the newspapers that the Department of State was going to attempt to prevent Owen Lattimore from taking a trip to Russia, and a typical Washington publicity storm ensued. At this point Jarvinen informed the Seattle office that he had been interrogated by the FBI representatives and had informed them that the whole story concerning his

procuring tickets for Lattimore was not true. Jarvinen said he just wanted to tell someone something sensational and exciting, he did not realize it would go as far as it did, and he hoped he had not injured anyone in any way.

This could have ended the matter, but apparently the story about Jarvinen's actions went in some form to high levels in the executive branch, and the Department of Justice was directed to take action against the individual who had started the whole business. Accordingly, the Department of Justice sought and obtained an indictment under 18 U.S.C. 1001, which makes it a felony to knowingly falsify material facts or make false statements or representations in any matter within the jurisdiction of any department or agency of the United States. Holland and Richardson testified before the grand jury in closed session as did the FBI agents.

At this point, various people in the Agency began to have concern about what would happen at the actual trial. As this was our first court case, there was some confusion as to who had responsibility for establishing and maintaining a position. The Deputy Director for Intelligence, who happened to be a lawyer, conducted initial negotiations with the Department of Justice, and the Inspector General, who was also a lawyer, became involved. It was not until the time for trial was approaching that the General Counsel was given responsibility. At this time one member of his staff wrote a prescient memorandum, saying the matter of Agency witnesses in the case should never be allowed to go to court but should be settled even if it meant going to the President. Unfortunately, this course was not taken at the time. The Department of Justice had elected to send a special prosecutor to Seattle to handle the case rather than having the local US Attorney take the action as would have been normal. I talked to the special prosecutor and said we had serious concern about having Holland and Richardson called to testify in open court and saw no need for it since the FBI witnesses could testify to the same facts. The special prosecutor was adamant, however, and we withdrew to analyze our position further.

While there were doubts in general about the desirability of having Agency witnesses testify in court, the really serious point that developed was the credibility of the Contact Office when it told informants that their identity and the fact that they were informants to CIA would be protected. The Contact Office believed this assurance was one of the strongest assets it had in developing sources of intelligence, and if two of its officers were compelled to testify about a source in open court, the assurance would be considered meaningless by many important sources.

As this issue became clear, we began to analyze the problem of privilege under these circumstances: that is, how witnesses could be withheld or could refuse to testify. Based on our studies, I recommended to General Smith that

he instruct the officers in question to appear if subpoenaed and give their names and addresses but to refuse to answer any further questions on the basis of these written instructions. I took the letters General Smith signed to Seattle and talked to Mr. Holland and Mr. Richardson. They were perfectly willing to comply, as they were in complete agreement that their testifying might well dry up important local sources. I argued at length with the special prosecutor, who was in Seattle preparing his case, but got nowhere. I attempted to see the Judge before whom the case was to be presented (Judge William J. Lindberg), but he, a recent appointee to the Federal bench, had made it a rule not to see anyone connected with a criminal case before trial. The U.S. Attorney in Seattle under the circumstances wanted no part of the case. I finally extracted a promise from the special prosecutor that, if the point were reached where the CIA witnesses had to refuse to testify and the Judge appeared to be holding that they must answer, I would be permitted to argue in defense of their position.

The trial commenced and in due course Mr. Holland and Mr. Richardson were called. As instructed, they appeared, were sworn in, and in response to questions gave names, addresses, and place of occupation. The special prosecutor then began to ask them about whether they knew the defendant. They refused to answer, citing instructions from the Director. The Judge was, of course, taken by surprise and at first appeared uncertain as to his course of action. At this point the special prosecutor, in accordance with his promise, approached the bench and outlined the problem to the Judge and asked his permission for me to address the court in connection with the witnesses' refusal. After questioning me about my position and status, the Judge permitted me to make a presentation. I had worked up the points of law we had in mind during the previous few days and spoke for about 20 minutes. At the end the Judge said he would instruct the witnesses that they must answer and permitted the special prosecutor to repeat the questions he had asked earlier. Again, the witnesses refused, citing their instructions. The Judge then said he felt he would have to hold them in contempt but would want further proceedings on the matter after the Jarvinen trial had been finished.

The trial then resumed and ended with an impassioned plea by Jarvinen's counsel on the theme that the CIA and FBI must have more important things to do than prosecute a poor informant. Jarvinen was acquitted by the jury.

The Judge set a time for a hearing on the contempt matter. In the meantime we had retained a prominent local trial lawyer, George R. Stuntz, to represent the individual employees. Mr. Stuntz and I, together with his partner, prepared lengthy memoranda of law to support the refusal of the individuals. I submitted one for the Agency, claiming that the information was privileged and it had long been recognized that privileged information

relating to national security should not be required in open court. While this is a valid point, the facts of the Jarvinen case were most unfortunate as the information he gave was also given to the FBI and the fact that he had informed us had been made public. Consequently, it was difficult to argue as to the classified nature of the information. Mr. Stuntz argued for his clients on the grounds that they were acting under official instructions and had no choice in the matter. Again, there is a lot of law on this point, but unfortunately it goes both ways and a lot depends on the exact circumstances. Consequently, Judge Lindberg refused to accept our arguments but said that the importance of the issue was such that it should not be settled at his level and that, therefore, he was sentencing the two CIA witnesses to two weeks in jail. He apparently assumed that they would accept a reprimand without much concern and that a fine would be paid by the Agency, but he probably realized that we could not accept having our employees go to jail under these circumstances.

I asked Mr. Stuntz to take the necessary action to perfect an appeal, and I reported back to General Smith in Washington. I told him it would be a very difficult case on appeal and he asked if it would not be well to get someone like General Donovan to assist. I thought it would be most useful and went to General Donovan, who readily agreed to have his firm participate in the case *pro bono publico* in support of Mr. Stuntz, whom I had talked with and who was pleased to have the General's firm with him.

We went back to the Department of Justice at the appellate level and rather to our surprise they, in effect, reversed their decision and said they would support us on the appeal. My office was, of course, also studying the case further. At about the end of November 1952 all concerned independently but at almost the same time came to the conclusion that it was a very bad case to appeal. The facts were wrong for the issue we were facing, and we would in all probability get an opinion from the Circuit Court of Appeals level which would be a very unfortunate precedent. I had warned General Smith that this might be the outcome of our studies, and he had asked what alternatives there were. I said the only alternative would be a Presidential pardon, and he asked me to initiate proceedings looking for a pardon. General Donovan and Mr. Stuntz strongly recommended the pardon route.

I corresponded with the President's special counsel with inconclusive results, which in effect referred me to the Department of Justice. I discussed the matter with the pardon attorney at the Department of Justice, and he felt that in view of the unusual circumstances it was a matter that would have to be handled at the White House. After considerable back and forth, I reported in some frustration to General Smith that I was not getting anywhere. He seemed concerned and said to let him think about it for awhile. Several days

later he called me in to tell me that he thought he had made the arrangements for the pardon for Mr. Holland and Mr. Richardson, and he told me the following story which could only happen in Washington.

At that time the US Attorney General was former Judge James McGranery of the Federal bench in Pennsylvania, who had surrendered that job to come down as Attorney General for the very last days of the Truman Administration at the request of his old friend and political partner, President Truman. General Smith had run into Judge McGranery at the White House while one was waiting to see the President and the other had just seen him. Judge McGranery was very unhappy, saying he had taken on this new job as a service to his chief and his party and got nothing but vilification and abuse, and indeed there was considerable criticism of the Department of Justice, particularly in the Washington and New York newspapers. General Smith said he agreed that this seemed very unfair and apparently on the spur of the moment said to Judge McGranery that he, General Smith, was going up to Pennsylvania in a few days to make a speech to some assembly and he would be glad to point out the sacrifice that Judge McGranery had made in his service to his party if Judge McGranery would do something for him. On being queried, General Smith said we needed a pardon for the two CIA employees who had been sentenced to jail for contempt of court in Seattle. On December 17, 1952, I received a letter from the Pardon Attorney of the Department of Justice forwarding warrants of pardon for Wayne Richardson and Miller Holland without any petitions or affidavits having been filed with the pardon clerk and without any of the normal formalities involved in obtaining a pardon.

The effect of a Presidential pardon is not only to liberate the individual, but also to clear the slate as if the act involved had never been committed, so that in theory there is no record whatsoever of the individual being involved in a criminal matter. This, then, was a satisfactory outcome as far as the employees were concerned, but, of course, left the basic issues of interest from an intelligence point of view in the trial moot, and up to the present no resolution of these matters has been obtained.

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
NORTHERN DIVISION

UNITED STATES OF AMERICA,

Plaintiff,

-vs-

HARRY A. JARVINEN, No._____

Defendant. MEMORANDUM OF LAW

This memorandum of law is submitted by the Central Intelligence Agency, at the request of the Court. The question discussed herein is the privilege of employees of the Central Intelligence Agency, acting under instructions from their superiors, to refuse to testify in the matter of United States vs. Harry A. Jarvinen.

The Central Intelligence Agency is not a party to, nor has it any interest in, the case before this Honorable Court. The sole interest of the Central Intelligence Agency is to protect the national security of the United States.

STATEMENT OF FACTS

Wayne Richardson and Miller Holland, both employees of the Central Intelligence Agency, were subpoenaed to appear as witnesses for the Government in the pending cause of United States vs. Harry A. Jarvinen. Both have responded to the subpoena, although only Richardson has as yet been called upon to testify.

Under questioning by counsel for the Government, Mr. Richardson identified himself and stated that he was employed by the Central Intelligence Agency (CIA). In response to the next question by the Government, covering any conversations he may have had with defendant, Harry A. Jarvinen, Mr. Richardson stated that he was under instructions from the Director of Central Intelligence, General Walter B. Smith, not to testify further in this cause. These instructions are based, among other things, upon the statutory responsibility of the Director of Central Intelligence to protect intelligence sources and methods from unauthorized disclosure, under Section 102(d) (3) of the

National Security Act of 1947 (50 USCA., Sec. 403(d)(3)).

Counsel for the Government took no position, either in support or opposition, with respect to the privilege thus asserted. Defendant's counsel, Mr. Shucklin, stated that although recognition of the privilege by the Court would impose testimonial limits upon both plaintiff and defendant, he and his client accepted the fact that public policy here was paramount to his client's interests and he, therefore, supported recognition of privilege in the public interest.

The present memorandum of law on privilege under these circumstances has been prepared, pursuant to the Court's request. Specifically, the privilege asserted is not that the Central Intelligence Agency is immune to judicial process, but that the Agency and its employees should not be required to make public disclosure of facts relating to foreign intelligence sources and methods where, in the judgment of the Director of Central Intelligence, such disclosure would be contrary to the public interest and injurious to the national security. Such a determination has been made in this instance as evidenced by the instructions issued by the Director to the CIA employees here involved.

POSITION OF THE CENTRAL INTELLIGENCE AGENCY

The Central Intelligence Agency, an independent Executive Agency in the Executive Office of the President, was established by the National Security Act of 1947 (50 USCA 401 et seq.). This Act also created the position of Director of Central Intelligence to be the head of the Agency, and placed on the Agency specific statutory duties and responsibilities to be exercised under the direction of the National Security Council.

The Agency's duties, as set forth in Sec. 102(d) of the Act (50 USCA 403(d)) are strictly limited to the field of intelligence relating to the National Security. A proviso in Section 102(d)(3) of the Act (50 USCA 403(d)(3)) specifically forbids the Agency to undertake any police, subpoena, law enforcement, or internal security functions. The Agency, therefore, cannot be a party to a prosecution by the Government, nor can it recommend or advise on any criminal prosecution.

The Central Intelligence Agency makes no claim that it is immune to the process of law or to the jurisdiction of the Federal Courts. It does and must maintain that the process of the law itself, and the Federal Courts, clearly recognize that certain types of information will not be required by the Courts in either civil or criminal actions.

In this respect the Director of Central Intelligence is under a positive injunction from the Congress to protect intelligence sources and methods

from unauthorized disclosures, (3rd Proviso, Sec. 102(d)(3) of the National Security Act of 1947; 50 USCA 403(d)(3)).

The Congress emphasized this responsibility and its intention to see that the Director of Central Intelligence be given adequate authority to carry out this responsibility in a subsequent provision of law contained in the Central Intelligence Act of 1949. (50 USCA 40e(g)). This Act provides that in the interests of the security of the foreign intelligence activities of the United States and in order further to implement the proviso of Sec. 403(d)(3) of Title 50, that the Director of Central Intelligence shall be responsible for protecting intelligence sources and methods from unauthorized disclosure, the Agency shall be exempted from certain specific provisions of law and "the provisions of any other law which requires publication or disclosure of the organization, functions, names, official titles, salaries, or numbers of personnel employed by the agency,***."

Furthermore in implementation of the National Security Act of 1947 as amended, the President issued Executive Order No. 10290, dated September 26th, 1951, (16 F.R. 9795; note to 50 USCA 401) of which Part V is entitled: "Dissemination of Classified Security Information." Under this part, paragraph 30 is entitled "Limitations on Disseminations" and subparagraph "b" is entitled "Outside the Executive Branch." This reads as follows:

> *"Classified security information shall not be disseminated outside the Executive Branch by any person or agency having access thereto or knowledge thereof except under conditions and through channels authorized by the head of the disseminating agency, even though such person or agency may have been solely or partly responsible for its production."*

All activities of the Agency are, as pointed out above, subject to the direction of the National Security Council composed of the President and his top advisers in the field of national defense and security and in the conduct of International Relations. Both the Secretary of State and the Secretary of Defense are members of the Council. The National Security Council has issued to the Agency specific directives as to the extent, nature and methods of performance of its functions. These directives are classified as security information by the National Security Council, and the Central Intelligence Agency has no authority to reveal the information contained therein to public scrutiny.

It is the considered opinion of the Central Intelligence Agency that it would not be possible for an employee to give testimony concerning relations with sources of intelligence without violating the law, the executive orders set

forth above and the specific instructions of the National Security Council. This point runs to the protection of intelligence methods.

A further point concerns the relation with confidential sources of information. The source must have not only the protection relating to methods but must in addition be assured the protection necessary to maintain the confidential relationship to which he is entitled.

ARGUMENT

It is unlikely that a precise precedent for the present factual situation can be found. Intelligence by its nature attempts to avoid public discussion. The present intelligence concept and organization is a post-war development; nothing of the sort existed in this country before World War II. We are unaware of any court test prior to this cause of the specific statutory responsibility of the Director of Central Intelligence to protect intelligence sources and methods.

But the basic responsibility and authority of the Executive Branch to protect confidential information under its jurisdiction, which is the legal background of said statutory provision, has been upheld repeatedly by the courts and other authorities from the birth of our Government. The Director's statutory responsibility to protect intelligence sources and methods is a specific affirmation by the Congress of this concept and serves to emphasize its importance in the complex modern world.

The rationale underlying recognition of the exclusive jurisdiction of the executive to determine the public interest, and as well the needs of the national security, in the disclosure or withholding of facts relating to the foreign relations and the foreign intelligence of the United States is based, not only on the Constitutional prerogative of the President in this field, but also upon the fact that only the executive and its various specialized agencies are in possession of the many complex and interrelated facts which must be considered in making such a determination. This rationale is also applicable to Section 102(d)(3) of the National Security Act of 1947 imposing upon the Director of Central Intelligence responsibility for protecting intelligence sources and methods from unauthorized disclosure, subject only to the direction of the National Security Council.

Whether a particular question should be answered by a competent witness in a Court of law depends primarily upon whether or not the information requested is relevant and material to the issues involved in the particular case. The Court is fully qualified on the basis of the facts before it, or others which can easily be adduced, to make the necessary determination.

On the other hand, the question of whether public disclosure of

information relating to the foreign intelligence activities of the United States is contrary to the national interest, or injurious to the national security, can be determined only by the responsible authority which is fully informed as to such activities. It is of the essence that the facts relating to such activities in their entirety cannot be disclosed in open court. For example, the reason why the national interest precludes the public disclosure of facts relating to a particular intelligence source, regardless of how relevant and material such facts may be in a particular case, may well depend upon the effects of such disclosure upon other and wholly unrelated intelligence sources. Similarly the disclosure of intelligence methods which, viewed in the context of a particular legal proceeding may appear to be wholly innocuous, might well be seriously prejudicial to the overall intelligence effort. Since considerations of security themselves forbid putting before the court the essential facts, the Court cannot be possessed, as is the executive, of the facts requisite to make an intelligent determination of whether or not a particular disclosure is or is not in the public interest or is detrimental to the national security.

The number of instances in which the courts have recognized exclusive jurisdiction in the Executive Branch to make determination of fact and to disclose or withhold facts are rare, but each of them is founded upon the consideration that sound public policy requires the courts to exercise restraint in pressing their jurisdiction into areas where they are not qualified to act.

The Supreme Court itself best expressed their basic thought in the case of *Chicago and Southern Air Lines* vs. *Waterman Steamship Corporation,* 333 US 103, (1948). This case arose on an appeal from a denial by the Civil Aeronautics Board of a certificate of convenience and necessity for an international air route to Waterman and the award of the same to Chicago & Southern. The award could be made only with the express approval of the President under Section 801 of the Civil Aeronautics Act, 49 USCA 601. The question was whether Section 1006 of the Act (49 USCA 646) authorized judicial review of orders of the CAB permitting a carrier to engage in overseas and foreign air transportation, which orders are subject to the express approval of the President.

On this question, the court said:

> *"The court below considered, and we think quite rightly, that it could not review such provisions of the order as resulted from Presidential direction. The President, both as Commander-in-Chief and as the nation's organ for foreign affairs, has available intelligence services whose reports are not and ought not to be published*

> *to the world. It would be intolerable that courts, without the relevant information, should review and perhaps nullify actions of the Executive taken on information properly held secret. Nor can courts sit in camera in order to be taken into executive confidences. But even if courts could require full disclosure, the very nature of executive decisions as to foreign policy is political, not judicial. Such decisions are wholly confided by our Constitution to the political departments of the Government, Executive and Legislative. They are delicate, complex, and involve large elements of prophecy. They are and should be undertaken only by those directly responsible to the people whose welfare they advance or imperil. They are decisions of a kind for which the judiciary has neither aptitude, facilities nor responsibility and have long been held to belong in the domain of political power not subject to judicial intrusion or inquiry. Coleman V. Miller, 307 US 433,454; United States vs. Curtiss-wright Corporation, 299 US, 304, 319-321; Oetjen vs. Central Leather Co., 246 US 297,302. We, therefore agree that whatever of this order emanates from the President, is not susceptible of review by the Judicial Department." (333US 103 at 111).*

This recognizes:

1. The exclusive jurisdiction of the President in the conduct of foreign affairs;

2. The necessary relationship of intelligence to such affairs;

3. The right of the Executive in its discretion to withhold information relating to such affairs from public review;

4. The inability of the courts to act without such information where it might be pertinent; and

5. The incapacity of the courts, even if informed to make determinations left by the Constitution to the Executive arm.

It is apparent that the principles recognized by the Supreme Court in the *Chicago and Southern Air Lines* case, apply directly to the position taken by the Central Intelligence Agency in the present case. The Agency's only jurisdiction and interest in such information as the defendant is alleged to

have given it, is in the foreign intelligence aspects. This jurisdiction and interest is by common law and by statute exclusive, so that all determinations in regard thereto should be the responsibility of the Director of Central Intelligence, or the National Security Council, which has supervision of the Agency's activities.

An earlier case, *United States vs. Curtiss-Wright Export Corporation,* 299 US 304 (1936) stated the same general concept and discussed in part its history and application. In this case the Supreme Court was called upon to determine the constitutionality and legality of an indictment charging violation of a joint resolution of Congress, and a Presidential proclamation issued pursuant thereto, forbidding the shipment of arms or ammunition to foreign nations engaged in armed conflict in the Chaco. The case arose on a demurrer to the indictment and in part challenged as an improper delegation of power the unrestricted scope of executive action without adequate standards imposed by the Congress. In speaking of the exclusive province of the executive in the area of intercourse with foreign nations, the court said at pages 319 and 320:

> *"Not only, as we have shown, is the federal power over external affairs in origin and essential character different from that over internal affairs, but participation in the exercise of the power is significantly limited. In this vast external realm, with its important, complicated, delicate and manifold problems, the President alone has the power to speak or listen as a representative of the nation. He makes treaties with the advice and consent of the Senate; but he alone negotiates. Into the field of negotiation the Senate cannot intrude; and Congress itself is powerless to invade it."*

> *"It is quite apparent that if, in the maintenance of our international relations, embarrassment–perhaps serious embarrassment–is to be avoided and success for our aims achieved, congressional legislation which is to be made effective through negotiation and inquiry within the international field must often accord to the President a degree of discretion and freedom from statutory restriction which would not be admissible were domestic affairs alone involved. Moreover, he, not Congress, has the better opportunity of knowing the conditions which prevail in foreign countries, and especially is this true in time of war. He has his confidential sources of information. He has his agents in the form of diplomatic, consular and other officials. Secrecy in respect of information gathered by them must be highly necessary, and the premature*

disclosure of it productive of harmful results. Indeed, so clearly is this true that the first President refused to accede to a request to lay before the House of Representatives the instructions, correspondence and documents relating to the negotiation of the Jay Treaty–a refusal the wisdom of which was recognized by the House itself and has never since been doubted. In his reply to the request, he said:

> *The nature of foreign negotiations require caution, and their success must often depend on secrecy; and even when brought to a conclusion a full disclosure of all the measures, demands, or eventual concessions which may have been proposed or contemplated would be extremely impolitic; for this might have a pernicious influence on future negotiations, or produce immediate inconveniences, perhaps danger and mischief, in relation to other powers. The necessity of such caution and secrecy was one cogent reason for vesting the power of making treaties in the President, with the advice and consent of the Senate, the principle on which that body was formed confining it to a small number of members. To admit, then, a right in the House of Representatives to demand and to have as a matter of course all the papers respecting a negotiation with a foreign power would be to establish a dangerous precedent. Messages and Papers of the Presidents, p. 194."*

Again the Supreme Court said in the case of *Johnson vs. Eisentrager,* 339 US 763, at page 789:

> *"The issue***involves a challenge to the conduct of diplomatic and foreign affairs, for which the President is exclusively responsible." And in support the Court cited both the Curtiss-Wright and the Waterman cases.*

In connection with the position of the Central Intelligence Agency, that it is inextricably bound into the conduct of foreign relations, the following language in a 1952 Supreme Court opinion is apt:

> *"It is pertinent to observe that any policy towards aliens is vitally and intimately interwoven with contemporaneous policies in regard*

> *to the conduct of foreign relations, the war power, and the maintenance of a republican form of Government. Such matters are so exclusively activated to the political branches of government as to be largely immune from judicial inquiry." Harisiades vs. Shaughnessy, 324 US 580,588,589 (1952) again citing with approval the Curtiss-Wright and Waterman cases.*

Substitute the words "national intelligence" for the word "aliens" and precisely the same thought follows:

As is noted in the Curtiss-Wright case, the position of the executive has been consistent from the time of the first President and has been generally accepted by the courts. In 1865 Attorney General James Speed advised President Lincoln:

> *"Upon principles of public policy there are some kinds of evidence which the law excludes or dispenses with. Secrets of state, for instance, can not be given in evidence and those who are possessed of such secrets are not required to make disclosure of them. The official transactions between the heads of departments of the Government and the subordinates are, in general, treated as 'privileged communications.' The President of the U.S., the heads of the great departments of the Government, and the Governors of the several states, it has been decided, are not bound to produce papers or disclose information communicated to them when, in their own judgment, the disclosure would, on public considerations, be inexpedient. These are familiar rules written down by every authority on the law of evidence." 11 op. A.G. 142 (1865) (Emphasis added).*

A definitive summation of the position of the Executive Branch of the Government in this regard is provided by the opinion of Mr. Justice Jackson, of the United States Supreme Court, then Attorney General, when he was requested by the Chairman of the House Committee on Naval Affairs to furnish all Federal Bureau of Investigation Reports since June, 1939, together with "all future reports, memoranda and correspondence, of the Federal Bureau of Investigation or the Department of Justice, in connection with investigation made by the Department of Justice arising out of strikes, subversive activities in connection with labor disputes or labor disturbances of any kind in industrial establishments which have naval contracts, either as prime contractors or subcontractors."

Attorney General Jackson declined to furnish the requested information and in his opinion, stated in part, 40 OP. A.G. 45 (April 30, 1941):

"It is the position of this Department, restated now with the approval of and at the direction of the President, that all investigative reports are confidential documents of the executive departments of the Government, to aid in the duty laid upon the President by the Constitution to "take care that the laws be faithfully executed," and that congressional or public access to them would not be in the public interest...."

"Disclosure of the reports at this particular time would also prejudice the national defense and be of aid and comfort to the very subversive element against which you wish to protect the country. For this reason we have made extraordinary efforts to see that the results of counterespionage activities and intelligence activities of this Department involving those elements are kept within the fewest possible hands. A catalogue of persons under investigation or suspicion, and what we know about them, would be of inestimable service to foreign agencies; and information which could be so used cannot be too closely guarded.

"Moreover disclosure of the reports would be of serious prejudice to the future usefulness of the Federal Bureau of Investigation. As you probably know, much of this information is given in confidence and can only be obtained upon pledge not to disclose its sources. A disclosure of the sources would embarrass informants–sometimes in their employment, sometimes in their social relations, and in extreme cases might even endanger their lives. We regard the keeping of faith with confidential informants as an indispensable condition of future efficiency." 40 OP. A.G. 45, 46, 47.

"This discretion in the executive branch (to withhold confidential information) has been upheld and respected by the judiciary. The courts have repeatedly held that they will not and cannot require the executive to produce such papers when in the opinion of the executive their production is contrary to the public interests. The courts have also held that the question whether the production of the papers would be against the public interest is one for the executive and not for the courts to determine." (40 Op. A.G. 45, 49)

The foregoing authorities have dealt with the subject of the right of the executive arm of the Government to protect confidential information within its jurisdiction from public scrutiny. Further authorities are available on the special aspect of confidential relationships between the Government and individuals.

The case of Totten, Administrator, vs. U.S. 105 (1875) involved an action for payment for services alleged to have been rendered by one William A. Lloyd under a contract with President Lincoln. The services included travel behind the Confederate lines for the purpose of ascertaining the number and disposition of Confederate Troops and the plans of Confederate fortifications. Lloyd accomplished his mission with considerable success and made full reports of his findings to the Union authorities. The Court of Claims found that the services were rendered as alleged and that Lloyd was only reimbursed for his expenses. The Supreme Court in denying recovery on the contract stated at page 106:

> *"The service stipulated by the contract was a secret service; the information sought was to be obtained clandestinely, and was to be communicated privately; the employment and the service were to be equally concealed. Both employee and agent must have understood that the lips of the other were to be forever sealed respecting the relation of either to the matter. The condition of the engagement was implied from the nature of the employment, and is implied in all secret employments of the government in time of war, or upon matters affecting our foreign relations, where a disclosure of the service might compromise or embarrass our government in its public duties, or endanger the person or injure the character of the agent."*

The court went on to say that secrecy was a condition of the agreement and that the disclosure of the information necessary to the maintenance of the action defeated recovery. The opinion continued at page 107:

> *"It may be stated as a general principle, that public policy forbids the maintenance of any suit in a court of justice, the trial of which would inevitably lead to the disclosure of matters which the law regards as confidential, and respecting which it will not allow the confidence to be violated. On this principle, suits cannot be maintained which would require a disclosure of the confidences of the confessional, or those between husband and wife, or of communications by a client to his counsel for professional advice or of a*

patient to his physician for a similar purpose. Much greater reason exists for the application of the principle to cases of contract for secret services with the government, as the existence of a contract of that kind is itself a fact not to be disclosed."

In the later action of De Arnaud v. United States, 151,U.S. 483, (1894) the Supreme Court had occasion to consider an appeal from the Court of Claims judgment dismissing a complaint in which $100,000 was sought for services rendered by De Arnaud as a "military expert" employed for "special and important duties" by General Fremont for and in behalf of the Union Army. De Arnaud was a Russian, resident of the U.S., with prior experience as a Lieutenant of Engineers in the Russian Army. In 1861, Fremont had employed him to pass through the enemy lines, observe the order of battle, and report back. His mission resulted in the saving of Paducah, Kentucky. He was paid $600.00 for his services on a receipt marked "for secret services." Later he filed a claim for $3,600.00 "for special services rendered to the U.S. Government in traveling through the rebel parts of Kentucky, Tennessee,....which lead to successful results." His claim was supported by certificates from Generals Grant and Fremont. President Lincoln ordered the claim paid if just and equitable. The Secretary of War paid De Arnaud $2,000 which was received under protest although the receipt acknowledged payment in full. Subsequently, De Arnaud instituted an action in the Court of Claims.

The Supreme Court could recognize no distinction between "the secret services" rendered in the Totten Case and the "military expert services" which De Arnaud claimed to have rendered. The receipt which De Arnaud signed was considered to operate as a bar to any further demand. At page 490 of the opinion, the court stated: "Accounting officers have no jurisdiction to open up a settlement made by the War Department from secret service funds and determine unliquidated damages."

Thus far, this memorandum has been concerned with the basic principles which support the position taken by the Central Intelligence Agency in this matter. In order further to assist the Court in its determination of the question of law presented, an effort has been make to discover cases which more precisely cover the factual situation here involved.

As was noted at the opening of this argument, the exact situation appears not to have arisen before the courts in the past. Certain cases, however, appear to be relevant.

U.S. ex rel Touhy vs. Ragan, et al, 340 U.S. 462; 71 Sup.Ct. 416 was a habeas corpus action in which a subpoena duces tecum was served on an employee of the Department of Justice to produce certain records and

information. The decision turned on Department of Justice Order No. 3229, providing that when a subpoena duces tecum was served on an officer or employee of the Department of Justice, such officer or employee would appear in Court and state (if such was the case) that he had been instructed by the Attorney General to refuse to produce the records. This Departmental Order was based, in turn, on Rev. Stat. 161 (5 USCA 22) which reads:

> *"DEPARTMENTAL REGULATIONS. The head of each department is authorized to prescribe regulations, not inconsistent with law, for the government of his Department, the conduct of its office and clerks, the distribution and performance of its business, and the custody, use and preservation of the records, papers, and the property appertaining to it."*

The Court upheld the legality of the Departmental Order and the rights of the employee to refuse production of the records, but stated that it was not concerned with the effect of a refusal to produce in a prosecution by the United States.

As has been pointed out previously, in this memorandum, the Central Intelligence Agency also is not concerned with the effect of its determination to instruct employees not to testify on a prosecution by the United States. The Agency is forbidden to take into consideration, law enforcement and internal security matters. Its creation was one facet in legislation intended by the Congress to "provide a comprehensive program for the future security of the United States." (Prologue, National Security Act of 1947. 50 USCA 401) Consequently, it finds itself somewhat in the position of the Treasury Department in the case of *U.S. vs. Andolscheck, 142 Fed. 2nd 503* (2C C A 1944.) This case arose out of an indictment charging conspiracy of employees of the Alcohol Tax Unit to accept bribes to permit an unlawful withdrawal of alcohol subject to tax. Defendant sought to have produced and admitted certain investigation reports. This was refused on the ground their disclosure was forbidden by a regulation of the Treasury Department making such records confidential.

The Court stated at page 506

> *"While we must accept it as lawful for a department of the Government to suppress documents even when they will help determine controversies between third persons, we cannot agree that this should include their suppression in a criminal prosecution, founded upon those very dealings to which the documents relate,*

and whose criminality they will, or may, tend to exculpate. So far as they directly touch the criminal dealing, the prosecution necessarily ends any confidential character the documents may possess; it must be conducted in the open, and will lay bare their subject matter. The Government must choose either it must leave the transactions in the obscurity from where a trial will draw them, or it must expose them fully."

In the present case the Government as represented by the Central Intelligence Agency has not the choice indicated by Judge Hand in the opinion. It can not expose the transactions fully and must, therefore, leave them to obscurity.

The results that this position might have are indicated by the case of the *United States vs. Cotton Valley Operators, Committee, et al,* (Civ. A No. 2209) USDG., W. D. La., Shreveport Div., September 20th, 1949, judgment affirmed *per curiam,* April 24th 1950. (339 U.S. 940, 70 Sup. Ct. 793.)

This was a suit by the United States for violation of the Sherman Anti-Trust Law. The Court ordered the plaintiff to produce certain documents requested by defendant's motion for inspection. Plaintiff filed a motion to vacate the order. The Court denied the motion, and on plaintiff's refusal to comply with the order said:

"On the last mentioned date, counsel for the Government appeared and submitted further authorities as to the right of the Attorney General to claim and for himself determine the question of privilege as to the documents called for in the motions to produce. Thereupon, after considering said cases, the Court stated from the Bench that to sustain this contention, would in effect, amount to an abdication of the Court's duty to decide the matter and leave it entirely in the hands of the Attorney General; that if the documents were submitted to the Court, with such claims as to privilege as the Attorney General desired to make, they would be considered before allowing opposing counsel to see them and if it appeared, in the Court's judgment, that production of any part thereof would be injurious to public interest, they would be excluded; otherwise, the order to produce for the inspection of defendants would be sustained. This, having been declined, would be allowed for further consideration, and the latter, stating no additional time was desired, the Court announced that the only course left was to dismiss the complaint for failure to comply with its orders. All the motions by both sides, above enumerated, and the minutes of the Court,

and notes of the court reported are made part hereof.

It is therefore ordered, adjudged and decreed that this cause be dismissed for the failure of plaintiff to comply with the Court's order to produce for its inspection and documents called for in the motions, so it could determine the question of privilege under the law."

SUMMARY AND CONCLUSIONS

It is respectively submitted that the cases and other authorities cited and discussed in this memorandum establish that:

1. The Courts have uniformly recognized the exclusive jurisdiction of the executive, including appropriate agencies under executive control, to determine whether public disclosure should be made of facts relating to the foreign relations and foreign intelligence activities of the Government.

2. This principle is founded upon an awareness by the courts that the facts pertinent to a determination that such disclosure is or is not in the national interest or detrimental to the national security are not a proper subject for judicial cognizance.

3. Both under this general principle and under the statutory provisions establishing the Central Intelligence Agency, that Agency and its Director qualify as an executive agency entrusted with exclusive jurisdiction to determine whether or not the disclosure of facts relating to foreign intelligence sources and methods is in the public interest or likely to be prejudicial to the national security.

4. Such determination having been made by the Director of Central Intelligence, who has directed the Agency employees here involved not to testify upon the ground that their testimony would constitute an unauthorized and harmful disclosure of facts relating to foreign intelligence sources and methods, this Honorable Court should recognize and enforce the privilege thus asserted.

5. Recognition having been given the privilege against disclosure, it is for the Court in its discretion to determine what disposition should be made of the cause before it in the light of the situation then existing. The Central

Intelligence Agency has no interest in, and takes no position with respect to, that determination.

Respectfully Submitted,

General Counsel
Central Intelligence Agency

A study in marked contrasts

SCANDINAVIANS AS AGENTS

Max A. Hatzenbeuhler

Mention Scandinavians—Norwegians, Danes, Swedes, or Finns—to the average American and chances are he visualizes a group of blond, blue-eyed, athletic Vikings living more or less happily in the land of the midnight sun. True, there are many similarities among the four Nordic countries: each one is a model democracy and a welfare state, each has clean cities and well cared for countryside, a small population predominantly Lutheran, literate, and sports-loving and each has a high living standard and a strong social conscience. The four countries cooperate closely in many areas and permit their citizens to move about freely within the area and to live, work, and pay taxes wherever they choose.

The Scandinavians themselves take great delight in emphasizing the differences among the nationalities rather than their similarities. A Norwegian might well be offended if mistaken for a Swede and a Swede, in turn, might feel insulted if taken for a Norwegian. A popular story, which any visitor is apt to hear in at least one version, tells of a group of Scandinavians shipwrecked on a desert island. The Danes immediately begin to form a cooperative, the Norwegians start to build a boat, the Finns get drunk, and the Swedes stand around waiting to be introduced. Other tales have it that Norwegians think Swedes too tense and too much impressed with being the richest country in Scandinavia and that Swedes consider Norwegians simple and rustic, loud-mouthed, slow and lazy. Danes, on the other hand, are amused by all this, convinced that only they know how to live—how to relax and enjoy life. The business-minded Danes in their turn are put down by their Nordic brethren as "the Chinese of the North."

As one becomes acquainted with more and more Scandinavians, a pattern emerges which indicates that some traits are typical of the citizens of one country more than of another. The Finns, Swedes, and Norwegians have long had serious alcohol problems, but the Danes, who do their drinking more moderately, do not. The high suicide rates in Sweden, Denmark, and Finland are well known; Norway, however, has a remarkably low suicide rate. The much-discussed Swedish film "I Am Curious (Yellow)" was banned in Norway. A typical Dane makes himself as comfortable as possible and turns serious problems into jokes; a Norwegian is adventurous, belligerent about his

rights, works hard and plays hard; the Swede is careful and methodical except when he decides to break loose; and the Finn is an individualist and fatalist.

These are generalizations, of course, since there are unhappy Danes, Finns who don't drink, unadventurous Norwegians, and even disorganized Swedes. However, a knowledge of the general characteristics of the various Scandinavian nationalities and the differences between them can be useful to the case officer faced with a Scandinavian agent, actual or potential.

The Finn

Any observations on the personality of the Finns needs to be prefaced by a comment on their attitudes toward Americans who, in general, are more eagerly courted by the Finns than any other nationality. There is in Finland an unusual reservoir of good will toward the American; he is with little encouragement, positively lionized and is regarded kindly as a person even by Communist adherents. Despite their political convictions, the latter usually welcome the opportunity for a friendly conversation or friendly debate; they do not consider the American a capitalist oppressor, or look on him with the fanaticism with which they regard their own political conservatives. In general the kindly attitudes stem from a number of factors: (1) America is in their eyes still the land of energy, ingenuity, and opportunity; (2) America has a favorable history of association with Finland; (3) Finland's own isolation from the West during World War II and subsequent isolation by being off the regular Scandinavian tourist track makes foreigners and particularly Americans persons of special interest and (4) not the least important is that about every 10th Finn has some relative in America who by Finnish standards has made good.

It is not possible, though, for the American to capitalize on more than a small fraction of the favorable disposition of the Finns unless, to state the obvious, he speaks their language, a language which is complex and difficult and one which has accounted as much as the geography for the Finns' isolation. Imperative for the successful case officer, therefore, is at least an intermediate level command of the language for this has a direct bearing on the way in which he will be accepted. The Finn is proud of his language, its rich literature and music; thus, when a foreigner displays a deeper interest in his country by learning to speak Finnish, he can expect a doubly kind reception. Under the circumstances, the Finn then knows that you, the foreigner, are not ignorant of some of Finland's accomplishments.

As an individual the Finn is reserved often to the point of shyness and it takes some doing to break through that barrier. Once you have penetrated it though, you will find a man with an almost English sense of humor, a humor

which is given to puncturing self-importance and bombast. It is English in the sense that it often turns on dryness, understatement, and subtleness. The Finn's feelings are guarded behind a wall of etiquette ranging from proper little speeches to a rigid dinner table protocol. These customs are strictly observed by him to ensure that he will be doing the correct thing and not appear ludicrous or out of place. He has a fear of being conspicuous or comically different and any host who puts him into a position that makes him look bad, even though it is his own fault, can expect a reaction of distaste that the host may never know. On the other hand, Finnish men have a well-deserved reputation for their drinking capacity. The shyness and formality of the Finn tends to melt away after a few drinks, and the formal, correct Finn with whom you sat down to dinner in a restaurant two hours ago may suddenly begin to sing along with the dinner-music pianist. In such situations one should remember that with the following morning the Finn's shyness and formality will reassert itself; the case officer should try to insure that the evening will be remembered as a pleasant, shared experience rather than one in which the Finn made himself appear comical or foolish. It is well, therefore, to stick to accepted custom in entertaining and in early acquaintanceships. Once you get to know an individual better and know the latitude you have, you can take freedoms you think warranted.

It is hard to get through the reserve of the average Finn because, as I have stated, it is for him a protective wall. You can break through, however, by creating some common bond, some common interest which gives a point of identity. Such a common interest, for instance, as fishing, sailing, bridge, or any other activity that will bring you together for longer periods of time in an informal way.

In entertaining a Finn with whom you wish to establish a friendship as a prelude to involving him operationally, it is well to base the extent of your entertainment on a careful evaluation of his means. Many Finns who like you and thoroughly enjoy the dinner or party you hosted will not reciprocate because of their limited means. A deputy department chief in a government ministry, for instance, may well live with his wife and two children in a small apartment with very little space for entertaining. If your dinner has been pretty nice by our standards, it may well have been lavish by his, and he (or his wife) will feel that it would be embarrassing for them to invite you to their tiny place, and that setting a table equal to that you set for them is simply too expensive.

Very early in an acquaintanceship with an American, the Finn may drop the formality of using titles and propose use of first names. Normally among the Finns this would mean a close personal relationship, but in your case don't be fooled into thinking you are now on a truly first name level. The

Finn may have made the proposal because he knew that it is an American custom; his guard hasn't essentially dropped or his reserve melted away with the use of the second person singular form of address.

Among other characeristics you will find the Finn generally hospitable and honest with a strict respect for the law. He knows the law and abides by it. You will seldom see him exceed the speed limit, change lanes in traffic, or park illegally. He has an almost religious regard for legal regulations, a characteristic which at times has its drawbacks. Therein lies one of the frustrations of dealing with the Finnish bureaucracy; it is almost literal in its interpretations of regulations while paper, documents, and stamps obsess it at every level.

Although the Finnish electorate shows a heavy leftist vote, the Finn is not a dissenter or revolutionary. His vote on the left is a protest in the sense that he feels the worker is being treated inequitably by the social system but that protest doesn't extend to advocating violence to redress the inequities. There is also a lack of deviousness in the Finnish character which is borne out even in crime statistics. Unlike reports in the US, a premeditated murder for revenge or profit is unheard of. Killings, when they occur, are the result of spur of the moment action, committed out of drunkenness or sudden passion.

To generalize further on the Finn is to indulge in characteristics common to most northern Europeans, but there are rules to observe in dealing with them as agents. Foremost among these rules is: Don't talk down to your agent. Treat him as an equal and co-worker. Even a housemaid in Finland is treated with dignity and sits down to dinner with the family; she is treated as part of the family. Secondly, although you believe you have cause, be careful how you correct your agent. It must be done tactfully enough to avoid the reaction one Finn had to a Britisher, namely, "He's a goddamned school teacher." Needless to say, that relationship didn't flower. Third, don't be cynical about your agent. He is probably not as venal as you may think. That he accepts and works for pay is not all of it with the Finn. There is usually a deep element of working for the cause and against the enemy and that element should not be slighted. Of course, the intelligent case officer would not do so directly; but, if he thinks his agent is venal, he may let it show in his attitudes. Fourth, if your agent comes to a meeting drunk, don't let it disturb you. Finns are heavy drinkers, and it is a rare Finnish agent whom you will not see well liquored up from time to time.

The Swede

The 1970 *Information Please Almanac* divulges the intelligence that the population of Sweden is 7,912,000, adding in ominous parentheses that the

inhabitants are "practically all Swedish." Therein lies the root of the development and recruitment problem in Sweden. For after eliminating on the grounds of their marginal socio-political roles four million beautiful, charming, intelligent and responsive (particularly to Americans) distaff statistics and another two million salt-of-the-earth rustics, you are left with about two million Swedish city fellers. And welcome to them.

Any American more than casually acquainted with the lives and mores of the males who run this tight little half of the Scandinavian peninsula is apt to harbor the feeling that "to know the Swede is to detest him." There is abundant evidence from everyday life validating the aptness of the most common adjectives used in describing the average specimen: smug, self-centered, arrogant, insular, self-righteous, insecure and xenophobic. But, as the man said, "All generalizations are false—including this one." The Swede who wouldn't dream of addressing a stranger in Stockholm is the same man who contributes to the deserved reputation for zany antics of his countrymen on vacation in Mallorca. The Swede who patiently waits for three others to tee off at Kevinge Golfklubben, each playing alone, rather than suggesting a foursome comprised of persons not formally introduced, will immediately and with sincere pleasure join a foreign stranger for a round of golf—provided of course that the foreigner takes the initiative.

All this suggests that the Swede is caught in a box at home with all those other Swedes around him, a victim of rigid public behavioral patterns and hangups too numerous to count (not the least being the mass-guilt of a people who profited from World War II while their neighbors were being devoured by Soviet Russia and Nazi Germany.) This is not to say that he likes the box. He wants out, not so much geographically as psychologically, particularly if he has himself experienced the liberated feeling of life abroad. In his cups or to a close friend while sober he will be as harshly critical of his countrymen, their stricly structured society and "storsvenskhet" (Great Swedishness—arrogance) as the most critical foreigner.

The key, then, to development of a Swedish target individual is to work to break through his superficial social armor, preferably under conditions as far removed as possible from his immediate home environment. These conditions naturally obtain outside Sweden, but can also be found on skiing trips in the mountains, or while boating in the archipelago, or in a sauna followed by a liberal libation.

Even under ideal conditions, however, the Swede will probably not be developed to the point of solid recruitment overnight. With the exception of a tiny minority of professional pro-Americans, the Swede requires a fairly lengthy period of cultivation before he will accept his American acquaintance as a true friend, a person in whom he has confidence, a person whom he

might turn down but would not turn in.

Probably the least effective approach to development of the Swede is for the case officer to pretend to be a Swede. The last thing the latter wants is somebody crawling into his box with him; this removes the only advantage of the box, and very possibly one of the main reasons for its construction: solitude, a feature of life highly prized by all Scandinavians. Be thyself should be the rule for the case officer.

Beyond confidence in his case officer as a person and as the provider of the key to break out of his staid surroundings to play in the big leagues of international politics, the Swede will be influenced by the prospect of material gain. Sweden is the most affluent of the Scandinavian nations; it is also the country where aspirations have furthest outdistanced incomes. Thus, the Swede is probably in actual need of more money to support the level of living he aspires to than his neighbors who lag behind him economically. Col. Stig Wennerstrom was paid the equivalent of $100,000 in cash, exclusive of his Moscow escrow account, during his fifteen years of service for the GRU. And he blew it all.

Come to think of it, for anyone seriously interesed in the subject of how to deal with the Swedes (and why else has the reader got this far?) the Wennerstrom case, as readably recounted by H. K. Roenblom,[1] is certainly worthy of study. In the recruitment and handling of this Swedish Air Force colonel, the Soviets came up with a near-perfect blend of ego-satisfying recognition and financial inducements based on a profound knowledge of what made a rather typical Swede tick.

The Dane

It is a fair statement that the normal red-blooded CIA case officer often is subjected to fanciful yearnings for a vacation, TDY or a posting to Copenhagen. Visions of open-faced sandwiches, Tuborg beer, Vikings, swinging blonds and Hamlet's Castle dance through his head. The desire to see this hedonistic Shangri-la so dear to the heart of Temple Fielding lures our man ever northward. His ardor wanes and the beer becomes tasteless during the long, dark, damp and windy winters when the Tivoli Gardens take on the visage of an American ghost town.

Although the average case officer's operational contacts will be restricted largely to Danes living elsewhere than Denmark, it should not be forgotten that the Dane is a product of his homeland.

One of not quite five million, the Dane lives in the smallest and most

[1] Roenblom, Hans Krister, "The Spy Without a Country," N.Y., Coward-McCann, 1965.

densely populated of the Scandinavian countries. The nearly complete absence of any minorities and the long history of democratic development have resulted in an ethnically and culturally homogeneous citizenry. Denmark has almost a total lack of any natural resources—no coal, no oil, no metals, and no hydroelectric power (the highest waterfall is under 5 feet!). The Dane lives only about 900 miles from Moscow and Soviet power is clearly visible in the form of naval vessels transiting a few miles off Copenhagen to and from the Baltic Sea. The Dane is only too well aware that his small country walks a tightrope in the international power game and his economic well-being is dependent on being friends with all nations.

While forced to look outward for economic survival, history and the fortunes of war have resulted in many years of preoccupation with internal affairs. Denmark has not fought a war since 1864, which was the last of a series of humiliating defeats. Since that time, pacifism and neutralism have been strong factors in Danish politics and personal philosophy. Under the pressure of events and the vivid reminders of German occupation in World War II, the Danes reluctantly joined NATO; however, Denmark has consistently fallen short of NATO goals and continued membership has been lukewarm at best.

Left largely to themselves, the Danes have constructed one of the most highly structured state welfare systems in the world. On the other hand, the economy still is firmly wedded to a fundamental belief in free enterprise albeit severely circumscribed by punitive taxation and controls. No other European country has a smaller amount of nationalized industry. This all-pervading welfare philosophy coupled with a homogeneous population has created a large middle class with very few extremes at either end. The lack of opportunities for economic advancement have caused the Danes to seek alternative status symbols. In addition to intellectual attainment, the striving for individual recognition in the midst of egalitarian pressures has manifested itself in many curious ways. A striking example is the almost fanatic attachment to titles and ritual. There are no "misters" in Denmark. Everyone, including many women, has an officially approved title which should be used if one is to get any results in the bureaucracy or shops,—"Her Mechanic Hansen," "Her Master Plumber Jorgensen," or "Her Office Chief Christensen." Even the telephone directory lists subscribers by the alphabetical order of their titles rather than their initials or first name. Try finding your old buddy Jens Jensen amongst the many pages of Jensens in the Copenhagen directory!

What comes out of all the conflicting cultural, historical and economic pressures placed on the Dane? The guiding spirit of Danish public and private life is compromise. This "don't rock the boat" philosophy pervades all

relationships. It is almost oriental in execution: don't argue—it upsets people; don't fight—it isn't worth it; don't say no—maybe the problem will go away; live and let live—there is a little good and a little bad in everything. It has been suggested that the national symbol be the famous Danish Red cow: it doesn't give much milk and it isn't particularly good for meat, but it gives a little of both!

At the risk of over-simplification, the individual Dane may be said to lean toward the following predictions: A love of home and family—a Dane's home is his castle to which he retreats each day to tend his flowers. Woe betide the neighbor who permits his children to play in one's garden. (A well-known radical child psychologist erected an electric animal fence to keep his kids in and the neighbors out!) Ownership of a modest summer cottage by the sea where the whole family can troop off to during the annual four-week holiday is one of the highest goals in life. A genuine enjoyment of good living and physical comfort—not in the ostentatious sense, but more of the quiet brandy-and-cigars variety. A keen sense of humor, which usually is double-edged to mask one's true feelings. A reluctance to give truly of oneself for fear of leaving one open to ridicule and loss of individuality. A sense of national unity and solidarity often expressed in the "little country" context, more as a unity of people sharing a common life and philosophy than in terms of pure nationalism or particular loyalty to Denmark as a political entity. An avoidance of controversy and competition as they only lead to ill feelings between people and groups, although the Dane can be a very hard-nosed businessman. A deep antipathy towards violence of any kind as a manifestation of human aberration. A sincere belief in the perfectibility of man through brother and international cooperation as manifested in an idealized approach to the United Nations and similar peace-promoting organizations. An emotional attachment to international good works and strong dislike, often without knowledge of the basic facts, of what the Dane feels are oppressive or provocative regimes. A compulsion to join various societies and associations for the promotion of causes, but not a "joiner" or "booster" in the Rotarian sense.

Vis-a-vis the United States, the Dane considers himself culturally and personally involved. Over a half million of his countrymen have emigrated to America and the fourth of July celebration put on by the Danish-American Society attracts thousands to the hills of Jutland. The Dane deeply respects the American attachment to democratic ideals and the manifestations of generosity to the rest of the world. On the other hand, this idealization of the United States results in a strong emotional reaction, if not personal hurt, when he reads of the violence, civil strife and alleged callousness of US actions in other parts of the world. In this vein, many persons, including

Danes, have commented that the Dane adopts a holier-than-thou attitude toward the rest of the world. The level of this criticism often appears to rise in direct proportion to the distance of the problem from Denmark. Twit a Dane on the treatment of the Eskimos in Greenland, and you will get a stony stare and a change in subject.

When considering the Dane as an agent, we find both negative and positive factors bearing on his recruitment and subsequent role. The strongest motivational factor for accepting recruitment—or, as the Dane would prefer, cooperation—appears to stem from his attitude that clandestine activity offers a channel for the individual to break out of the cocoon woven around him by the state and society. It puts a little spice into his middle class life and gives him a mental one up on his fellows. Working for or with the clandestine arm of the world's greatest power gives the Dane a challenge and provides a release from his frustrations. Essentially, there are very rare occasions when the Dane makes a moral commitment to his association with his recruiter and case officer. As long as the tasks levied on him are not in conflict with his culture or society, he willingly cooperates without a moral involvement. Fighting Soviet imperialism or defending Western culture simply does not turn on the average Dane. In certain cases, the Dane has been asked at the time of recruitment if he desired his case officer to clear the relationship with the local authorities. In very few cases has he opted for this escape valve. In many instances, the agent has expressed his contempt for "those blundering fools." One suspects that, by disassociating himself from the herd, he can express his individualism more vividly in his own mind. On the other hand, this willingness to align himself only with his American case officer should not be taken to mean that the agent has made a moral commitment to keep this relationship. The Dane bases his willingness to work with the case officer in terms of mutual respect and cooperation. If his basic cultural or personal life is threatened by this relationship, he will pull out and/or protect his tail by confiding in friends or the authorities. It is seldom that a Danish agent will permit himself to be drawn into a situation or relationship from which he cannot back out. In essence, our experience indicates that we have recruited a number of witting collaborators, but very few agents in the classical sense.

The Norwegian

In treating the subject of Norwegians as agents, it is necessary first to consider factors that have conditioned Norwegian thinking on intelligence and its collection. It is these factors that have been the basis for a productive liaison relationship and, consequently, have meant that Agency experience in recruiting and employing Norwegians directly as agents has been meager.

The German attack in April 1940 brutally dispelled the prevalent notion in Norway that smallness, good-will and a desire to remain neutral were sufficient to spare a nation from aggression. A generation of Norwegians experienced at first hand the consequences of a lack of forewarning and preparedness. In the war years that followed many, particularly among the younger men, participated in clandestine activities against the German occupiers and their local collaborators. Thus, World War II resulted in an awareness among Norwegians of the need for and value of intelligence in the defense of their nation and the acquisition of a certain amount of operational expertise, especially in the collection of military intelligence. The war also made clear the need for a small, exposed nation to have allies.

At war's end, Norway found itself with a common border with the Soviet Union in the far north by virtue of the Soviet acquisition of the Petsamo-Nikel area from Finland. The Russians had accumulated good will among Norwegians for their role in the struggle against Nazi Germany and, closer to home, for their part in clearing the German forces from Finmark. This was largely dissipated, however, by Soviet postwar actions in eastern and central Europe. Norway, its democratic outlook, Atlantic orientation and mistrust of totalitarian regimes strengthened by the lessons and experiences of the war, joined NATO, albeit with reservations, designed to blunt Soviet objections, against the stationing of foreign combat forces and nuclear weapons on Norwegian soil in peacetime. At the same time, the pro-American attitude among Norwegians, a great many of whom had relatives and friends in the United States or had visited this country as crewmen in the Norwegian merchant fleet, was bolstered by American assistance during the war and by Marshall Plan aid after the war.

Thus, there has been a fair climate in Norway in the years since World War II for the organization and utilization of resources for the collection of foreign intelligence in conjunction with their major allies. The Soviet Union has been recognized as the principal threat to Norway. The Norwegian leadership and people generally have accepted as a necessity an intelligence service and effort to provide early warning, and there have been men experienced in intelligence and possessing vision and ability to build and lead an intelligence service. Moreover, the development of the northwest USSR as a military area whose forces pose a major threat to both Norway and the United States has provided

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basis for close cooperation

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Nevertheless, certain

general characteristics that bear on Norwegians and intelligence agents can be pointed out. Like all generalizations, the proverbial "taken with a grain of salt" is applicable when trying to apply them to individual cases.

Norwegians are neither notably conspiratorial nor subtle by nature. They tend to be direct, opinionated and unsophisticated. The salaries, taxes, assets, license numbers and makes of cars of Norwegian citizens are all published and open to public scrutiny. Thus, they do not hesitate to ask even slight acquaintances questions about position, income and similar details that might be considered highly impolite elsewhere. As with other Scandinavians, the lack of acute, internal problems such as race (the Lapps having been ignored), crime, overpopulation, urbanization and large international responsibilities permit the Norwegians to freely and with the slightest of factual knowledge to criticize and offer advice to other countries regarding their problems.

The directness of Norwegians is coupled with, and perhaps in part the result of, an emphasis of the physical over the intellectual and psychological. Norwegians, possessing a rugged, unspoiled country of great natural beauty, are nature worshippers. They revel in the outdoor life and sports. Also, much of their economic activity has been of the physical variety, with the sea and the forest looming large in it. Personal service and service industries have not been emphasized. In fact, the Norwegians make bad servants. This bent toward direct, physical action had made the Norwegians notable seamen, fishermen, skiers and speed skaters and in wartime good saboteurs and resistance fighters. When applied to the field of intelligence collection, it is not surprising that it is in the areas of collection against physical targets and installations that they have excelled rather than in the subtler areas of personal manipulation and political plans and intentions. Skills of the seaman and outdoorsman such as keen observation and the operation of radios have enhanced their capabilities and potential as observational and technical collectors. The experience that comes to merchant seamen in hiding things on shipboard and smuggling personal items in and out of ports has made them adept at concealing the paraphernalia of espionage. Thus, properly motivated, trained and briefed as to specific targets to be gotten at, the Norwegian is likely to be an excellent agent. Left to report such things as political trends and events, he is much less adept.

Motivating factors for consideration in dealing with Norwegians in intelligence collection are those normally found in agent recruitment and handling: patriotism or a common cause, friendship and respect between case officer and agent, love of adventure, and gifts of money.

The appeal to love of country and a convincing case that what he is asked to do contributes to the security of his country, is, of course, a motivating factor that has proven valid to date. For all their protestations that Norway is

"just a small country," Norwegians tend to be nationalistic, many even chauvinistic. Hence an appeal incorporating any intimation that the American case officer, as the representative of a large, powerful country, knows best and will give the orders in a relationship is very apt to backfire. An appeal based on cooperation in the common cause is sound.

Good personal relationships are not difficult to establish with Norwegians. They are friendly people. However, they are prone to emphasize legalities. Litigation is cheap and is frequently resorted to in resolving personal differences. In reaching an understanding with a Norwegian, especially where compensation and benefits are concerned, a clear-cut and detailed agreement, oral or written, is essential for maintaining a good relationship. Accustomed to a broad system of social welfare, Norwegian expectations in the field of "fringe benefits" are likely to surprise an American case officer.

Among Norwegians, the sheer challenge and excitement of intelligence collection in denied areas can be a significant motivating factor. Also, money and gifts, such as liquor, can be highly effective. However, just as "orders," as opposed to "cooperation," can easily backfire, so the question of emoluments must be introduced with some finesse. Norwegians are not a corrupt or venal people. Their basic needs are met in their society and ostentation, even among the rich, is shunned. Nevertheless, solid comforts, e.g., boats, good homes, and furnishings, seaside and mountain cottages, television and automobiles are much prized and very expensive. In a high-cost-of-living society such as Norway where the tax burden is extremely progressive but heavy on all, people are discouraged from engaging in overtime or "moonlighting." An income not subject to taxation can, therefore, be an enticing and increasingly useful factor in a developing relationship. An abrupt offer of money without previous development based on other of the motivating factors mentioned above, however, is generally to be avoided. Gifts of liquor, another prized but very expensive item in Norway, are a better gradual lead-in in the form of "gifts." Tickets to sports and theatrical events are, as usual, useful as well.

Finally, the Norwegian, never hesitating to note the smallness and by implication lack of influence of his country but seldom underplaying his own oracular powers and superior understanding of how to solve other nations' problems and how things should be done, craves praise for his accomplishments. If praise is due, it should not be withheld. If criticism is due it should be given, but diplomatically. Norwegians, like other Scandinavians, can be very thin-skinned and stubborn. Above all, treat them as equals and give them time to talk.

Among the Nordic peoples, Agency experience has shown Finns and Norwegians to be the best [redacted] Their personal characteristics, history and geography have made it so. Whether Norwegians

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will continue to be so is a matter of concern. The lessons of World War II fade; leftists and neutralists permeate the school system, especially in Oslo; and constantly increasing criticisms of US policies (e.g., Vietnam) in large segments of the media and within the political parties will take their toll and may have a long-term negative impact among the youth, and eventually on policy. Our job will then be more difficult [redacted] 25X1

On balloons and bureaucracy

THE GOOD OLD DAYS – "You Are on Your Own"

Walter H. Gioumau

In the recent past the writer was involved in a problem which was difficult to solve because it clearly did not fall within existing CIA regulations and, therefore, was subject to various interpretations. While exploring means to achieve a solution through the uncharted channels and shoals of shifting bureaucracy, and exercising a branch chief's prerogatives, the writer was told that his solution, while acceptable, was not technically (bureaucratically) correct. After full responsibility was willingly assumed, the writer was told, "OK, you are on your own." Subsequent developments are not important; however, after hearing that he was "on his own," the writer paused to reflect upon the last time he had heard these words during his CIA career. It was in October 1951, and it happened as follows.

Readers will recall that the US was locked in a bitter, hot war with North Korea in 1951, while the cold war in Europe remained a chilling threat to our security. OPC (Office Policy Coordination), one of the two principal action arms of the CIA, was attempting at the time to infiltrate CIA agents into Eastern Europe to contact possible resistance groups or elements, to establish resistance and stay-behind cells, and to collect intelligence regarding Soviet capabilities and intentions. The border control procedures of the East European countries were highly effective and almost impossible to penetrate. Hence, the mortality rate of CIA agents dispatched behind the iron curtain via land, sea and air was very high. We need not dwell at length on the reasons for the great success of the Satellite services in apprehending CIA agents or neutralizing CIA agent operations, but something obviously had to be done to improve our penetration capabilities.

Now, in 1951 the US Navy was conducting weather surveys via the use of huge plastic balloons filled with helium. These fragile-appearing transparent bags, made from polyethylene and carrying sensitive equipment, could attain heights between 100,000 and 120,000 feet, depending upon the weight of the instruments and the volume of helium. [redacted] of Minneapolis - St. Paul was the prime contractor for the weather studies and manufactured the plastic bags at its plant in Minneapolis.) The US Navy had also begun to experiment with smaller plastic bags which could carry one or two men.

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At that time CIA had a small Research and Development Section located in

one of the temporary wooden buildings around the Mall. One section chief was a Navy Commander who had acquired a film made by the US Navy which demonstrated the feasibility of plastic balloons for manned flights. The writer's branch chief saw the film and decided to explore the feasibility of using plastic balloons as a vehicle for dispatching agents behind the iron curtain. With such impressive credentials as the ability to speak an East European language and being in good health and also single, the writer accepted with alacrity when asked if he were interested in acquiring "balloon training" which could be passed on to agent candidates.

The training was scheduled and conducted under US Navy auspices at the [redacted] in Minneapolis - St. Paul. The Navy was most hospitable and provided cover for the writer as a civilian employee. The [redacted] project engineer was cleared by CIA and was made fully witting of the training desired by the writer. Appropriate arrangements were then made for the writer to report [redacted] Minneapolis.

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The writer drove his car from Washington, D.C. to Minneapolis over a weekend and reported for duty to the project engineer. On arrival he was greeted with the news that until further notice the Navy had prohibited the use of helium for any further manned balloon flights as the result of wide publicity generated by press and photo coverage of the landing of a manned balloon near Manitowac, Wisconsin. The project engineer opined that he was certain the Navy ban on the use of helium would be lifted in a short time, and suggested that the writer observe the manufacturing, equipping, and launching of the weather balloons (similar to manned balloons) in the interim. After several weeks of this onerous duty, interspersed with frequent telephonic exhortations to Washington to intercede with the Navy and have the ban lifted so that training could begin, the writer requested a forthright appraisal of the situation by the project engineer. The latter quite candidly said he had no idea when manned balloon flights would be approved by the Navy, but in any event if the writer wished to fly it could easily be arranged by substituting hydrogen (readily available commercially) for helium. When asked if he believed a hydrogen balloon were safe, the project engineer said he thought no hazard was involved. Plans were then made to dispatch the writer at night, and over a weekend, so that the writer's absence from the [redacted] Special Balloon Section would not be noted.

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To complete plans for the launch, the writer phoned his branch chief in Washington for approval. During a conversation in double talk, the writer was asked whether he thought the flight were feasible. The writer gave assurances that it was feasible and that no security problems should ensue. The branch chief stated, "OK, you are on your own." In clear text this meant that if the writer were involved in a flap he could expect little assistance. Thus, the way

was cleared for the writer's first balloon flight.

Before dusk on a cool Friday in that October the project engineer, his secretary and the writer drove to the airport where the cylinders of hydrogen were stored. (The Navy weather reconnaissance balloons were launched from the same airport.) The writer slipped into a fleece-lined jacket, pants, boots and helmet; the secretary removed the plastic bag from a box; the project engineer hooked up the hydrogen cylinders to a central pipe which controlled the flow of hydrogen. The twenty five cylinders of hydrogen went to work; the balloon rapidly expanded, became taut. The writer was given a last-minute review of launch and descent procedures, put on a Mae West life preserver, slipped two roast-beef sandwiches into his pockets, and strapped on the parachute harness. Lift-off occurred at approximately 1800 hours.[1] The ascent was so gradual and silent that the writer had little sensation of leaving the ground. According to the weather charts, strong winds beginning at 11,000 feet would carry the balloon on a slightly curving trajectory east of Minneapolis, across Wisconsin and Lake Michigan (therefore the Mae West), and touchdown was expected to be somewhere in northern Michigan. Unfortunately the balloon would go no higher than 8,000 feet, according to the altimeter, and constantly lost altitude. In fact, after studying the altimeter closely following the dumping of several cups of sand to increase altitude, the writer realized the slight, persistent hiss he heard was the sound of escaping hydrogen. To complicate matters, the balloon was in a circular course directly above Minneapolis - St. Paul. What a beautiful sensation! Beneath my feet were the criss-crossed, lighted streets filled with countless, honking automobiles. Certainly no place to attempt a landing in a leaky balloon! By valving gas a controlled descent was made to approximately 4,000 feet where a strong breeze was picked up which carried the balloon past the city limits. Soon the runway lights and flashing beacons of Chamberlain Airport passed underneath. It appeared that, finally, we were underway.

An ear shattering roar broke the silence of the night. It sounded just like an airplane throttling down on its final approach—and the lights of Chamberlain Airport were still visible. What to do? I tried turning around in the parachute harness to ascertain the source of the roar. I was not able to do more than turn my head 90 degrees to the side. I was flying backwards because the parachute, which was draped along the side of the balloon, acted like a sail rather than a rudder. Also, according to the flight rules of the Federal Aviation Authority, a balloon was to carry a blinking red light 50 (or was it

[1] It should be noted that the balloon carried no basket or other comfortable seating arrangement. The writer sat on a board and the parachute harness suspended the passenger directly beneath the bag. An altimeter, compass, and two bags of sand were strapped to the parachute shrouds.

150) feet below it, and the flight plan had to be cleared in advance with the FAA. Because the flight was without official Navy sanction, FAA had not been apprised, nor were any lights carried. I did not know whether to jettison the balloon (an emergency release would separate the passenger and chute from the balloon) or go higher or descend. As the roar increased I decided to wait and see if the plane would turn on its landing lights so that I might get a bearing or heading. Then, after a long suspense, I spotted the source of the noise—The Rock Island Express, a fast diesel train, had made a stop outside of St. Paul, and as it picked up speed the roar was amplified upward by the earth. I had hardly put this episode behind me when heavy rain began beating on my balloon. Due to its pear-like shape, rain rushed down the sides of the balloon. I felt myself, as it were, sitting under the end of a gushing funnel. Naturally, this dousing added weight to the balloon; again, altitude was rapidly lost. Sand ballast was discharged; up we went.

Around midnight I discovered that about 10 pounds of sand remained as ballast. (The flight began with 40 pounds of sand carried in 2 canvas sacks.) I spotted an open corn field and headed downward. The 150-foot drag line was dropped (the bottom 50 feet were of heavy rubber hose, 100 of parachute cord.) The balloon dropped steadily. The rubber hose touched the earth and I landed hard on my feet. Because I was riding backwards, I had found it most difficult to estimate the moment of impact. Therefore, I pulled the rip cord as soon as I hit the ground to tear a large hole in one of the balloon panels to release the hydrogen. However, my reactions were too slow and the balloon, suddenly free of 200 pounds of weight, plus or minus a pound, shot back upwards, carrying its passenger about 10 feet in the air. The ripped panel finally did its work; the balloon collapsed to earth. I was dazed on impact and recovered from impact only slowly and painfully. Fortunately, all was well. I cached the balloon gear and hiked several miles to Red Wing, Minnesota, where I spent the rest of the night in a motel. I phoned the project engineer to advise him of my location. The next morning I returned myself and my gear to Minneapolis without incident.[2]

About two weeks later I made another night flight. This outing was pure joy. The balloon did not leak; the parachute had been arranged to face the passenger rather than behind him; no rain beat down. Just before dawn I landed on the outskirts of Rochester, Minnesota. Once again the gear was cached and retrieved without incident.

[2]It should also be mentioned that hanging beneath a free-air balloon in a parachute harness on a cold, wet night in October made it impossible to respond to normal urgings of the body. The plethora of zippers in the fleece-lined flying suit proved to be of no assistance, and a mental note was made not to consume any liquids prior to any subsequent flights.

After completing two night flights without incident under somewhat clandestine circumstances, the writer believed he had exhausted his credit with Lady Luck and he also felt confident he could train any agent candidate to ascend and descent safely in a hydrogen-filled plastic balloon. He returned to Washington and subsequently went overseas per plan.

In retrospect, it is doubted that under CIA's current management philosophy a flight under similar conditions would be feasible today. It is appreciated that since 1951 the US Government has grown and with this growth it has instituted various levels of budgetary reviews of CIA activities. Congress likewise is more interested in CIA operations. CIA regulations and operating procedures now require various clearances, approvals, etc., and considerable effort, time, and planning are devoted to the purely bureaucratic aspects of any operation. There is little doubt that such scrutiny tends to inhibit freedom of action. However, whether under these circumstances today's breed of "managers" and "administrators" make CIA a more effective organization makes for interesting discussion. How many times have you recently been told, "OK, you're on your own."

Some rules, ploys, and plays

BASIC PSYCHOLOGY FOR INTELLIGENCE ANALYSTS

Charles D. Cremeans

When Allen Dulles chose to have the words "For ye shall know the truth and the truth shall make you free," carved in white marble at the entrance to the Headquarters building he was giving expression to an article of faith in the intelligence profession. We must believe that knowledge of the truth sustains and supports our government or we couldn't justify what we are doing.

Working intelligence officers know, however, that it isn't always as easy as it sounds. "What is the truth? How much evidence do you have to have? how selected? how organized? how presented? how evaluated before we have the truth that will make our country free?—and free from what? We all know that good and true men disagree on these matters, as on the evidence on any given subject of intelligence concern. We also know that from time to time, every intelligence officer worth his salt wakes up with a shock to realize that he has been misreading the evidence on some familiar topic. This can happen because he has gone along with the common wisdom, accepted unexamined assumptions, or just plain gotten into a rut. It can also happen if preoccupation with success, or mere survival in the intelligence culture become more important than intelligence itself.

The sensitive intelligence officer becomes aware from time to time of the effect on our finished product of the interaction of personalities and institutions within the intelligence community. We are, after all, human beings; we have deadlines to meet; we tend to favor our own conclusions over those of others; and we all know that a little salesmanship here and there, a little blarney, a measure of cajolery, and some basic psychology can often get a paper agreed to and on its way to the White House, while without such inputs it might languish and spoil under the heavy hands of some well meaning but less subtle colleagues.

The object of this paper is to look at some of the ways in which we get our work done, ways that depend more on human psychology than on cold reason. The purpose in mind is not to collect a bag of tricks, a primer of intelligencemanship, but to focus a spotlight on one aspect of our craft which is usually ignored. The purpose in doing this is not to suggest that an end be put to this kind of thing. God forbid that we stop being human, that we coldly reject, as being unsuited to our profession, such phenomena as the

well-known eloquence of the distinguished dean of photointerpreters. But we should be aware of ourselves as we really are and not be misled into thinking all our peccadilloes foster the rapid and certain discovery of the truth.

We may start with a look at some of the oft quoted laws of intelligence.[1] The most famous of these is Platt's Law, which reads, as set down by its discoverer: "Whether or not the necessary explanatory details and pet phrases of an intelligence paper appear in the paper as finally published, depends entirely upon whether the number of higher groups which successively review the paper is even or odd respectively."[2] In the Office of National Estimates this is sometimes rendered: "If the Staff writes it long, the Board wants it short—and vice versa."

Another famous principle is that of Excessive Approval. Every intelligence Indian—i.e., drafter—knows that when the review board or panel, or whatever the higher echelon is, responds to a request for comments with unstinted praise, there comes a point at which the drafter feels a sense of foreboding. It usually means that his paper is about to be torn to shreds.

All veterans of intelligence coordination are familiar with the law of Emphasis by Place. This law is often referred to in this manner: "I suggest that the item referred to at the end of the paragraph—or section, or paper—be brought up to the beginning in order to give it greater emphasis." It is equally often cited by urging that an item that appears at the beginning be put at the end "in order to give it greater emphasis." Ajudication on this matter usually depends on whether the Chairman wants to argue about whether emphasis is bestowed by early or late reference or whether he thinks the time is suitable for a throwaway concession in the hope that the gesture can be collected on at a later time.

Most notorious of the laws of intelligence is Murphy's Law: "When something can be misunderstood, it will be." The archives contain no record of Murphy. He may have been an honorable and well-intentioned man, but, sad to say, his law is more often than not cited by someone whose opinion of his boss is that he can and will read only one sentence at a time. The result of this assumption is that all the supporting calculations and data must be stuffed into the sentence in question, making it incomprehensible by the most intelligent reader, and probably to the boss for whose benefit the re-writing is being proposed.

A quick look at these laws of intelligence shows that they really are

[1] We do not propose to set down all the "laws of intelligence," but only those commonly cited or applied in the production of intelligence. Kent's Law, for instance—"Any coup d'etat I have heard of isn't going to happen"—is a profound truth but not within the scope of this paper.

[2] Studies Vol. 13, No. 4, pp. 89-90.

techniques of persuasion rather than laws the knowledge of which enables one to understand the behavior of phenomena in the real world. In fact it is in the realm of persuasion—of others, as well, sometimes, as of ourselves—that psychology most often obtrudes into intelligence.

Almost every intelligence analyst learns that if he wants to play it safe, or if he just doesn't know what is going to happen, an easy way out may be found through the Continuation of Present Trends formula. Unless he runs into really bad luck, an intelligence analyst of modest competence can usually go through a career with good marks simply by summarizing the evidence, and then pronouncing thus: "present trends are likely to continue." When this gets boring or too conspicuous, the More and More formula is often called into use. "King Hussein will find it more and more difficult to maintain control...," or he "will find it increasingly difficult...." This gets to be a problem when he has been finding it more and more, as well as increasingly difficult for years and years and still hangs on. Then it becomes increasingly difficult for the analyst. The point is not that he should be ashamed of himself for being unable to find an answer to King Hussein's future in all that mass of paper that flows across his desk but that it should be quite clear to himself and to his readers that the evidence doesn't provide the basis for much of a judgment—which, of course, he should go on looking for despite the inadequacies of information and insight.

Perhaps the fundamental relationship among intelligence officers is that between the expert and the nonexpert. The former, of course, being the person who is supposed to know—although he doesn't necessarily really know all about Patagonia just because he is on the desk—and the latter being the person who reviews, edits, revises, or just approves his work. We are talking, of course, about the Indian and the chief in the intelligence analysis tribal culture. In real life the expert is usually comparatively young and the nonexpert or supervisor, comparatively old. The supervisor was probably an expert once but has to cover too wide a field, has too much administrative responsibility, or is too tired to be anything but a "generalist."

Actually, both the specialist and the supervisor have essential jobs to do, but the relationship is inherently a difficult one and, as a consequence, the ingenuity of man (real "intelligence officers") rises to the challenge with formulae that make life easier—sometimes for one, sometimes for both parties. For the expert the neatest solution is to know so much, to calculate so well the requirements and the quirks of the supervisor as well as the supervisor's supervisor, and to translate this into such a good end-product that the boss can only sigh and sign off. Unfortunately, not every supervisor knows when he is getting a perfect draft, and so even the best of the experts resort to certain stratagems to make their lives tolerable.

One approach, very often overdone, is that of laying on the expertise with a trowel: "Well, you know sir, unless you have lived with the Khmers as I have it is quite impossible to understand their reaction to the current situation." Another frequently used ploy is that of drowning your opponent, or boss, with facts. One famous "expert," who did know as much about the Arabs as anyone in town, insisted on going into the fine points of tribal differences, whatever the issue at hand, until in the end he had only to open his mouth to provoke groans and numerous visits to the washroom. In the first case by taking the line that only experts can understand, and in the second, by becoming irrelevant, the expert weakens his position and, indeed emphasizes the need for the intervention of a nonexpert, preferably one with good sense and judgment.

For his part the nonexpert (or no longer expert) supervisor can fall into equally dangerous traps if he tries too hard to compensate for his inadequacies. One of the most common dodges of the one-upped supervisor is the counterexpertise play: "Well, I don't know anything about the Khmers; I'll be the first to acknowledge it; but I remember a situation very like this Southeast Asia thing we are discussing which took place some time back when I was in Central America, and I can tell you...."

The old timing game, of course, is played by both sides in this contest of generations. How often has the drafter of a paper come rushing into a senior's office, saying, breathlessly, "Hope you can read this right away, sir. I spent all weekend on it and it's got to go to the DD this afternoon. Incidentally, the girls have started typing, so I hope you won't have too many suggestions." Of course, there have been a few times when a supervisor has stopped a staff man in the hall, saying, "By the way, I had lunch with the DD and he asked about that paper you gave me to look at. I thought I had better give it to him right away. Sorry I didn't have time to consult with you about it, particularly as I rewrote the last section and put it at the beginning."

Well, we're not all perfect, and this sort of thing goes on partly because in many cases things would not get done if it didn't. The point here seems to be that the better a man the expert is and the better a man the supervisor is, the less the need for stratagems. So, if you're an expert, get a good supervisor, and if you're a supervisor....

There are, of course, a good many pitfalls that specialists and nonspecialists together can get into. One of the worst, both from the point of view of the people involved and of the whole intelligence community, is a syndrome best represented by the famed "numbers game." The problem usually arises when there is a strongly felt need on the part of the top users of intelligence for a degree of precision which the evidence, or, indeed, often the subject, does not permit. When the top policy makers ask, for example, "How many Russians

are there in Cuba anyway? Just give us your best guess." The people down the line ought to be very cautious, we all know now, about giving them a figure at all unless there is a certain minimum evidentiary basis for it. The consequence, of course, can be finding ourselves unable to change figures even when our intelligence improves, because of the difficulty of explaining how we got the original figures on the books anyway. All this adds up to one of the most important rules for the intelligence officer: Don't fool yourself into thinking that if higher authority demands it, it makes sense to put out something that is basically unsound.

The intelligence officer's working life is not spent only at his desk or in consultation with his supervisor. There is the group: the meeting, the committee, the task force, the discussion, the debriefing—all standard situations in the intelligence culture. These intelligence group's experiences might not seem to some to be as dramatic as what we are told goes on at the Esalen Institute in California where people grope, in the company of others, for self-understanding, but they can be pretty real and earnest. They probably produce as much self-realization and as much bloodshed as similar competitive situations anywhere. On any good workday one will find as wide a variety of successful personal styles on display in intelligence groups, as in a Madison Avenue idea session, in a back boardroom, or an academic committee.

Every experienced participant in group intelligence knows the country boy who talks of the inner mysteries of Soviet space technology with just enough of a southern drawl to add a human touch. There is the blustering Devil's advocate who specializes in outlandish and unanswerable propositions. There is the man with a cause who specializes in stripping the flesh off the proponents of a rival school of analysis. There is the specialist in the scathing personal attack at the right moment. (My favorite, and one done in good humor, is an instance where criticism of a sentence in a draft paper was conceded by the author to have been "ambivalent." "Sir," said the critic, "You do yourself too much credit. An ambivalent sentence has two meanigs. Yours has none at all.")

Along with the bad guys, and the bores, the sycophants, and the fools—intelligence officers may be carefully screened, but no foolproof battery of tests has yet been devised—there are, naturally a fair proportion of good guys of all sorts. Here, as elsewhere, the observer of the intelligence culture must conclude that the fact that intelligence people are people is all to the good, as well as being unavoidable. Furthermore, it does not obscure or change the fact that, whatever the style, the ability to produce sound intelligence is the payoff in the end.

There is still another situation in which intelligence officers interact and

which gives rise to its share of specialized behavior patterns. I refer to the joys of coordination, particularly of that highest form of agony known as interagency coordination. Getting things done within an agency, as amply suggested above, is complex enough, but in an interagency situation, where the boss can't resolve the disputes, a very specialized form of interaction takes place. How it all works, I shan't pretend that I understand, though there are a few clues. When the Navy representative says, "Can't you please mention submarines in the section?" his colleagues are inclined to go along if it won't mess up the paper too much and if he can be expected to be agreeable when their turn comes. Perhaps the most time-honored and symbolic device of the interagency coordination process is the convention of bestowing "The Order of the Lion" on a representative who has done his duty and manfully presented his superior's case to an unreceptive audience. (The idea is that he can go back home and tell the boss that he fought like a lion but that the other agencies wouldn't have it.)

Nowhere else is the art of the tradeoff so highly developed. Nowhere else is such skill applied to the artful suggestion of a different form of words to say what is already in the text in order to save the face of a colleague who can neither withdraw nor make his proposal specific. The worst burden for coordinators is the colleague who insists that he, or his boss, doesn't like something but doesn't know why or what he wants to do about it. The greatest problem, of course, is the intervention of departmental interest, or policy commitment, into the discussion of an intelligence judgment. Most representatives realize that this is a high crime—or at least that it stultifies the process—but all tend to be sympathetic with the colleague who they know has to go back to a boss who doesn't know or care about the distinction between intelligence and policy. The miracle is that interagency coordination of intelligence works as well as it does, that the people who do it get along, and that the end product is almost always sound intelligence.

What is there to conclude from all this? That we are people, like other people, and that our personalities, our instinctive drives, and our subconscious minds get deeply involved in the process of "knowing the truth"? I believe so, and I believe it is essential that we acknowledge and take account of this while doing our best to create as much as possible of that marvelous stuff, objective intelligence, which is what Allen Dulles probably had in mind when he selected that quote from the Bible.

Methods, habits, and consequences

A NOTE ON KGB STYLE

Wayne Lambridge

The KGB like any enduring institution has a style, its own way of doing things. When we seek to understand the service and its officers, we should perhaps pay attention to how they do business as well as to what kind of business they do. This article is intended to raise the subject for discussion, to present largely one man's opinion. It is far from a definitive study.

By way of indicating something about KGB style, consider the implications for the organization as a whole of a communication system that carries one tenth or less as much traffic—both electric and by pouch—as its American equivalent. The KGB sends very few cables and its dispatches are infrequent. For maximum security, they are pouched on undeveloped microfilm, which is recovered and printed when the dispatch reaches its destination. Although Moscow headquarters does excellent and prompt printing, both exposure and development are sometimes haphazard in the field. Ten years ago, they were downright unreadable at times. Now, the quality is generally better. Volume, however, does not seem to have risen much.

The prints of the developed films are seen by the Rezident (the KGB Chief of Station) and by the case officer concerned. In large Rezidentury (KGB Stations) some intermediate may also read the traffic, but that is by no means always the case. The Rezident keeps a file—sometimes in the form of notes or perhaps as copies of pertinent cables and dispatches—for reference. The case officer keeps all his files in a briefcase or a notebook. Calling them "files" is perhaps misleading. It is better to say that the KGB officer keeps a movable In-Box. When a document leaves that box it is either returned to the Rezident or destroyed and the fact of destruction recorded. The case file is really in the case officer's head. The excellent memory that KGB officers often display concerning the details of their operations may well be traceable to the necessity of remembering the vital information on each operation that they cannot look up anywhere. Of course, when a new case officer replaces an old one, especially if the latter has been unable to brief his successor fully, complications may ensue. Illness, car accidents and PNG'ing have led to real chaos in some KGB operations when a harassed new man has tried to tie down the broken threads of a departed colleague's dropped contacts.

Although the amount of paper that he sees is small, the KGB case officer is

held strictly accountable for each sheet of it. When he destroys a document, a notation to that effect is included on a record. Even his scrap paper may bear a serial number and have to be accounted for. At the Moscow headquarters each document is sewn into the file by the senior officer directly responsible for the case. A special record of all documents in the file is kept by the case officer and its accuracy is regularly verified by the case officer's supervisor. Safe storage areas are locked and sealed with wax each night.

The ritual of sewing in the documents is often regarded as a waste of time by senior case officers in Moscow. Nevertheless, they would not dream of delegating the job. It seems to have a symbolic significance as an embodiment of both their authority and their responsibility.

The KGB case officer is his own intel assistant. At headquarters he does his own traces, gets his own documents from the archives and handcarries his own messages. Not too long ago, he also often wrote or typed his own dispatches. Even now he may write his own telegrams and personally take them and dispatches to his supervisor for review. In the field he is, if anything, even more responsible for doing everything connected with his operation except for technical surveillance and the like where he must call on experts.

The field case officer under official cover often works at his cover job about as much as do his colleagues who do not have intelligence responsibilities. This obligation is usually not as demanding on the case officer's time as it might first appear because KGB cover slots are usually selected so that cover duties complement intelligence tasks to a substantial degree. By contrast, other KGB officers have virtually no serious cover responsibilities and rely on the all-embracing security system of the Soviet colony to protect their true affiliation. In either case, the KGB officer is not expected to spend much time on the administrative or reporting aspects of his intelligence job. Within the limitations of his cover assignment, he is supposed to be out on the street, making contacts, working agents and performing other intelligence tasks, reporting only the highlights and the most crucial information back to headquarters.

In developing new sources, he will usually bring things along to the point where recruitment or some other substantial development is clearly foreseeable before asking for traces from headquarters or getting approval to go ahead with his plan. Local informers and support agents are sometimes picked up without reference to headquarters at all, except perhaps after the fact of recruitment. The KGB officer must account with some precision, however, for his operational expenditures and is usually quite limited in what he can spend for development prior to coming up with a concrete proposal for recruiting a source.

Once an agent is recruited or is established as a source, headquarters' control and demands for accountability are exacting, though never voluminous. For a recruited source with significant access, a senior officer, such as a branch chief or his deputy is specifically charged with responsibility for the case. Moscow's concern to insure that information is really coming from the source as described by the case officer and that the source is bona fide is very considerable. Somewhat by contrast, Moscow's requirements (outside of S&T operations) sometimes seem quite general, apparently leaving it up to the case officer and source to report what seems to them most important. On the other hand, reporting is expected to be factual and documentary, if possible. Sometimes the KGB seems obsessed with documents as the only reliable sources. Speculation is not usually encouraged.

In such a system of extreme compartmentation and vertical lines of communication and authority, the advisory role of staffs and other elements not within the chain of command is small. The First Chief Directorate, the foreign intelligence arm of the KGB, has a counterintelligence unit, for example, that actually takes over a case from the regular chain of command in the event that the agent appears to be doubled, compromised or in danger of compromise. The field case officer may remain the same, but in Moscow the Counterintelligence Service assumes full authority for directing the case. Deception and some types of complex political action operations often appear to be run directly by the headquarters element, Department A, that prepares the operation in Moscow. In such cases, of course, local assets of a Rezidentura may well be employed in support, but the operations are frequently run by specialists.

The typical KGB officer, trained in an environment where political agitation is part of daily fare, sees political action and propaganda as part of his regular routine. There are numerous examples of Soviet officers around the world who seem to concentrate almost exclusively on pushing the Soviet line on the issues of the day with whatever contacts they meet. To them the political approach is not something apart from spotting, developing, assessing, recruiting and agent handling. It is integral to that effort. Some do it crudely, some ineffectively, some with great skill. The point is that in almost all cases, it is a part of the operation.

In addition to politics, KGB recruiting and training of staff personnel emphasizes operational and area knowledge and experience from bottom to top. The main sources for new KGB officers are the institutes of International Affairs and Eastern Languages in Moscow. These institutions, which are better compared to the U.S. service academies than to other organizations of higher learning in America, prepare young Soviet citizens for careers abroad not only in the intelligence services, but for the foreign service, the Ministry

of Foreign Trade, Radio Moscow, etc. Assignment of a student after graduation is worked out among the various consuming organizations. The students are under what amounts to military discipline and are required to accept the assignment given them. Few students see much difference among the organizations these days except for differences in pay, length and location of overseas service and other practical matters.

In the course of their education the students learn two or three foreign languages well and study the history and culture of the area in which they specialize in considerable detail, although current politics is likely to be a much weaker course than history. Access to native sources is still circumscribed. A substantial number of students go for a year or more as exchange students or as trainees with Soviet organizations working abroad. As a result, they often end up knowing the area, its language, its politics, customs, police systems, local geography and so on very well. Although the old-style Soviet intelligence officer who was raised in the shadow if not the institutions of the Komintern and could recruit agents through appeals to an international revolutionary ideology are long since past, the newest generation of Soviet intelligence officers can be quite effective by trading on their precise knowledge of target personalities and the problems and frustrations of the countries in which they operate.

A KGB officer is ranked in his service by two systems. He progresses up the ladder from junior lieutenant to senior lieutenant and so on up to colonel and general. At the same time, he is classified as a junior case officer, case officer or senior case officer and then as he progresses further by his position, such as Rezident, which he may hold. His pay depends on his ranking in both hierarchies and there is no necessary coincidence between where he stands in one and where he stands in the other. The operational designations are based on his experience and performance as an operator. His formal rank is largely based on length of service up through major or lieutenant colonel. The chain of command is designated through the operational positions rather than formal rank. For example, a major of State Security from some other part of the KGB might be transferred into the First Chief Directorate under the designation of junior case officer and find himself subordinate to a senior lieutenant who had attained the position of case officer.

The phenomenon of marked disparity between formal rank and operational designation was probably more common during the period of considerable expansion of the First Chief Directorate's personnel ten and more years ago than it is today. At that time officers from other branches of the service were being brought into the First Chief Directorate more frequently than they are now. Nevertheless, the emphasis on operational experience and operational ability continues to be a marked element of the KGB style. The top officers

in the service, for example, usually involve themselves directly in operations. They meet and develop agent candidates, they recruit and they handle agents.

In part this is a consequence of the strongly operational orientation of the KGB as a whole. A direct involvement in operations comes naturally to almost everyone in the organization. This operational orientation is manifest also in the concentration of relatively few cases per case officer. Generally, one man may handle four or five agents or targets under development. He is not expected to spread his range of intelligence activities further, although he may well be encouraged to develop a large circle of casual contacts from whom a relatively small number of serious targets may be selected.

From the foregoing one can see that the typical KGB officer is a man who sees himself in a strict vertical chain of command. He expects to do everything necessary for his operation without much outside help, except in technical matters. Depending upon circumstances, the case officer may be closely guided by the Rezident in a particular operation, but he is not supposed to discuss it with anyone else. (Gossip and shop-talk are endemic, however, in part to overcome the excessive official compartmentation.) Although the case officer is held strictly to account for the results of his actions, he is not expected to report on day-to-day developments to headquarters and in fact the capacity of his communications system is far too limited to permit him to do so. He is street-oriented in the concept of his job and does not put in a lot of time at the desk writing reports, reading guidance from headquarters or maintaining his files. When he has a problem he takes it up with his boss and he is generally not expected to have many problems. He is supposed to know the difference between what he really needs consultation about and what he ought to be able to handle on his own.

His boss in turn has the responsibility of not only guiding the case officers that work for him, but of ensuring that vital information pertinent to the work of one case officer but acquired through another is made available. In both operational guidance and information sharing, the role of the Rezident is crucial. There is virtually no lateral distribution of communications and an extreme emphasis on compartmentation. Although the rigid compartmentation of the system is probably a major vulnerability, superiors both in the field and headquarters are usually able to keep up with each case because they are not overwhelmed with paper. Relatively primitive (in terms of capacity) communications equipment and the custom that each officer prepare his own reports and keep them brief make it possible for such reports as do get written to be read all the way up the chain of command. The general in command of the First Chief Directorate has been reported on several occasions as reading all the incoming traffic. Much of the outgoing traffic is also signed personally by him.

The strictness of the chain of command and the limited amount of communications place a great weight of responsibility on each Rezident and on each case officer. As with all Soviet officials, KGB case officers have a norm to fulfill for the year and are usually called to account for their activities during part of the annual home leave in the Soviet Union. In a system like that, if something goes wrong, someone must be found to have been responsible. This can encourage an extreme of caution, particularly when the relations between case officer and the Rezident are not of the best or when the headquarters desk officer is not cooperative and understanding of the problems in the field.

Although we are accustomed to think of Soviet organizations as highly impersonal, in the KGB personalities and the private connections of individual officers are often crucial to the success or failure of an operation—or a career. In many ways, the KGB is an organization made to order for the man who wants to claim all the glory for himself and put all the mistakes on the backs of his subordinates. Family connections or other personal contacts have special significance in this sort of an organization because they can provide a secure and effective second channel for communication in a system in which there is otherwise only one narrow route watched over by jealous monitors for all the messages an officer may want to send.

The emphasis on the role of the individual in the organization also has its advantages, of course. A capable officer, particularly one from an influential family, working under a Rezident who knows his business and will accept responsibility is likely to find himself in a stimulating work environment that may compensate very well for shortcomings of the service or the Soviet system as a whole that might otherwise disturb him.

While the KGB style as outlined above is in many ways admirably suited to running operations, it appears to have limitations in the way it makes use of the product of its operations and in evaluating whether the operations themselves are really worthwhile. There are enough instances on record to permit the generalization that in political matters especially Moscow is often reluctant to receive bad news. The ambitious case officer may find himself frustrated by pressure to conform, either from his Rezident or from Moscow, when he tries to report things as he sees them. To a large degree this is probably an inevitable manifestation of the extreme isolation from the outside world in which the Soviet policy makers live and their lack of exposure to unwelcome information. In addition, the emphasis on operations as such and the overall environment of the KGB, which is predominantly an internal security, criminal investigation, and antisubversive organization, probably discourages the kind of critical intellect by whom frank reporting, regardless of its content, is most prized.

This last consideration, the emphasis on an investigative, operational style at the expense of analytical curiosity, may well be the source of considerable tension within the First Chief Directorate today. Bigoted and inflexible ultimate consumers are problems enough. But also the older generation of KGB officers, including many of today's Rezidenty, was largely trained in war time and internal security operations. Their juniors, speaking broadly, are more academically inclined, more tempted to discourse on their theories, more interested in foreign societies and politics per se and less dedicated to fulfilling the obligations of the party and the state. They are often perceptive and realistic about developments not only abroad, but also in their own country. Bearing in mind the importance of personal relations and the dependence of juniors on seniors in the rigid chain of command, the signs we see these days of tension and cynicism among these younger officers should not be surprising.

As they rise in the KGB, we may see some organizational changes over time. If these changes preserve the laconic style of communication while at the same time do away with some of the most cumbersome and archaic aspects of the communications and records keeping systems, the KGB could become an even more formidable institution than it is today. The problem of encouraging intelligence analysis and imaginative, critical thinking is a problem for Soviet society as a whole. As a part of that society, the KGB shares the problem, but probably not in greater degree than other Soviet institutions and possibly less than many.

Judgments about the influence the KGB style has on KGB officers as individuals, about the implications for KGB operations of the way they do business, about the relevance of the style to Western operations against Soviet targets, and about many other related matters lead us beyond the scope of this note which, as stated in the introductory paragraph, hopes only to raise an interesting topic for further comment. If this piece succeeds in making the point that KGB organizational style is important to Western intelligence and that we should concern ourselves with it more than we have, it will have served its purpose.

INTELLIGENCE IN RECENT PUBLIC LITERATURE

THE ALSOS MISSION. By *Colonel Boris T. Pash.*

(Award House, New York, 1969, 256 pp., $6.95.)

A secret message from Henry L. Stimson, Secretary of War, to General Dwight D. Eisenhower on 11 May 1944 introduced the Supreme Allied Commander in Europe to a most unusual task force with a very unusual mission. This force with the code name "Alsos," a conglomerate group of very select military men and scientists, was destined to be involved in one of the most critical intelligence missions in World War II. This book, written by the military leader of the task force, Colonel Boris T. Pash, presents an authoritative account of this "highest priority" mission.

Perhaps it would have been appropriate to have had a prefatory description of the author, Colonel Pash. Some readers, especially those of the new generation viewing World War II with historical interest rather than that growing out of personal memories or experience, might misinterpret the actions here described, as fictionalized. Who would take the personal risks that Pash describes, and what career Army officer would continually circumvent military bureaucracy and "buck the system" as he did? Knowing the Colonel personally as I have through the years, and as a result possibly being subjective in my analysis, I nevertheless know that his account, albeit not documented historically, is true and accurate in every sense. Pash was one of those unique individuals who seems to emerge from nowhere at the right time in history to do the impossible.

The life story of this native born San Franciscan contains many chapters worthy of separate study. He was in Russia in World War I, and during the Bolshevik coup he joined the anti-Communist forces as a representative of his father, a Russian Orthodox bishop in the United States. His losing cause was not without some benefit, however. He returned with a beautiful blonde Russian aristocrat bride, Lydia. It was an amusing, sentimental, romantic, and yet interesting insight into his character and personality in how he wooed and won his bride. Aristocratic Russians of that day were unapproachable—and young officers of elite regiments made this more difficult. Social status was important and the beautiful Lydia would not initially even acknowledge the existence of this "fresh" young American. He had learned however through his own informant that the 18 year old beauty loved little kittens. He scoured the Ukrainian countryside until he found a small three-week old white kitten

which he called "Puss" and which he used as his introduction to Lydia. Puss became the sentimental nickname of his young bride and a name which has stuck to the present day. This incident, although amusing, does give an insight into his "devious" character. It probably also served to acquaint him with the necessity and importance of good intelligence early in life. This sentimental side of his nature one would learn only by close association with him such as his "Alsos" boys had. In some circles, however, he is looked upon as an ogre.

A Soviet review of a book written by Pash's scientific counterpart in Alsos, Dr. Samuel A. Goudsmit, pictured Pash as personifying "the chains of the most merciless machinery of coercion—the apparatus of military security." He was looked upon by the Soviets as "serving reactionary American politicians" and even as indirectly being negligently responsible for President Kennedy's assassination. Some liberals have also viewed the Alsos commander as an evil instrument of the military-industrial complex because of the active part he had played in uncovering information that resulted in the removal of Robert Oppenheimer as a potential security risk. Pash has the dubious distinction of being a character in a Broadway play that was sympathetic to Oppenheimer—a play which had a successful road run in the major cities in the West appealing primarily to the pseudointellectual liberal. I myself reviewed the play in Munich and in it the Alsos Colonel whom I knew as a completely dedicated patriotic American was pictured as a sort of neo-Nazi arch-villain, a part of a major conspiracy bent on bringing about suppression of factual scientific objectivity in the United States. This description of Pash as being cunning and shrewd is not without some element of truth, however his motives in being so were always based on patriotism and an almost fanatical determination to accomplish his mission.

Pash describes the Alsos mission from its beginning in the fall of 1943 to its culmination in the hectic days after the Nazi surrender. It involved a dedicated group of intelligence agents, scientists, and military personnel bent on determining the extent of the development of super-weapons by Nazi Germany, and to prevent any of it from falling into the hands of the advancing Soviets.

Adolf Hitler had been promising his people new super-weapons, and the Allies, who were themselves close to success in the development of the A-bomb, feared the worst—that the Nazis would have the bomb first. The Nazis themselves felt that they were ahead in the race. If this were the case, the war would be lost, regardless of a great superiority by the Allies in men and material. Another threat of similar order, was the possibility that the advancing Soviet armies might capture these weapons and the people involved in its research. The success of Alsos was thus of paramount importance.

Alsos had its conception in the fall of 1943 and its mission had been

assigned to the Army, specifically to Major General Leslie R. Groves, head of the United States Atomic Project. The Office of Strategic Services (OSS) and British Intelligence had been unable to come up with the needed information. General Groves and Major General George V. Strong, Chief of Army Intelligence agreed that a special military-scientific unit should be formed. Colonel Pash, who had been working closely with General Groves on a Soviet espionage case, was chosen as the task force military commander. The code name for the mission, as in most cryptonyms, had no special significance and the origin was unknown to author Pash. "Alsos," however, is the Greek word for grove (trees), and its selection may well reflect the hand of some university scholar in the bowels of the Pentagon where such names were dreamed up. It could possibly have been named after the General himself (Groves).

Pash and Groves worked well together. Pash, although a military man, had no love for army bureaucracy. Indeed, if he had allowed himself to be tied down in its quagmire of rules and regulations, he would probably never have accomplished his mission. Groves himself, as Pash described him, "never tolerated the staff gobbledygook and beating around the bush of which there was so much in Washington." Alsos just could not have functioned under such a system. Chosen for the chief scientist of Alsos was Dr. Samuel A. Goudsmit, who had been personally recommended by Dr. Vannevar Bush, director of the Army Office of Scientific Research and Development (OSRD). This combination, Pash, the military intelligence specialist, and Goudsmit, the brilliant scientist,[1] exemplified the compatibility of these diverse disciplines in the pursuit of scientific targets.

Pash and Goudsmit after sizing each other up found that they could work well together. Pash, who placed great value in a complete rapport among all people in the mission because of its special values, felt an instinctive trust and admiration of his scientific counterpart. "Despite the facade of intellectual aloofness so typical of many of our scientists of those days, my partner exhibited live human traits," Pash remarks. The two soon drew up a plan of operation. Briefly it was threefold.

1. The scientific section was to decide on targets, whether personnel, installations, or equipment.
2. Pash would seize those targets and protect them from destruction.
3. When the area was safe for non-combatants, the scientists in whose professional fields the targets fell would be brought up to conduct the necessary investigation.

[1] Chairman, Department of Physics, Brookhaven National Laboratory.

Although this plan was the general guide to the function of the mission, events later proved this was not always feasible. Pash and his Alsos mission often found themselves intentionally and unintentionally, much to the consternation of our top military leaders and some of our allies, far ahead of our front line combat troops.

Before the assignment of Goudsmit, Alsos had been assigned to a mission in Italy with Dr. James Fisk of the Bell Telephone Company as chief scientist. It also included Dr. John Johnson of Cornell University, Commander Bruce Olds and Major William Allis of MIT. Fish and Pash were the only ones briefed on the atomic bomb project. This interest, however, although the primary one, was not their only mission. Other intelligence of scientific interest was targeted, such as BW research, and indeed anything of a critical technical nature. A prime target for Pash was a Dr. Amaldi, an internationally known Italian scientist still residing in Rome, who, it was felt, could shed some light on German nuclear research. The OSS had failed to smuggle Amaldi out of occupied Rome. Pash tells the story. The associated problems and frustration are even today in reflection guaranteed to raise his blood pressure. Although Pash does credit OSS with many heroic exploits in World War II, their handling of Amaldi was not a particularly shining example. Pash and his force entered Rome on 5 June 1944 on the heels of forward combat elements. Their three targeted personalities, Drs. Amaldi, Georganni, and Weck, were soon reached. Laboratories and offices where information was available were gone over by the scientists. This relatively easy, although sometimes frustrating operation, was successful and produced some significant intelligence results. The major question of Nazi nuclear progress, however, was still not answered, and the real challenge still lay ahead. The Allies had just landed in Normandy and the path for Alsos was more clearly in sight.

After the completion of the Italian mission, Alsos had been officially established by order of Secretary Stimson, and with the new permanent assignment of scientists under Goudsmit, Alsos was ready for what lay ahead in France and Germany itself. The operation now took on formal organization and had direct liaison with the Pentagon through Major Howard J. Osborn.[2]

One of the first assignments for Alsos in France was to enter Paris at the first opportunity and sequester the world-famous nuclear physicist, Dr. Joliot-Curie, and his laboratory.

The details of how this was done are fascinating. It seems highly likely that only such an unorthodox individual as this "crazy Russian," as he was

[2]Now Director of Security, CIA.

described by some, could have accomplished this mission. He had not only to contend with the usual military rules and regulations of US Army bureaucracy, but with some restrictions from our Allies. The Free French, who had gained permission to enter Paris first, caused more problems than the diehard Nazis and French collaborators who remained in Paris. By devious means Alsos entered Paris ahead of the combat troops dodging sporadic rifle fire, and moved directly to Joliot's office, occupying his laboratory. Joliot-Curie, the top French nuclear physicist, was in the hands of Alsos.

Although a picture was beginning to be formed, the answer to the crucial question of the Nazi nuclear effort was elusive. The path now turned north toward Belgium. A refining plant of *Union Miniere Du Haut-Katanga,* the prime supplier of uranium ore, was located near Oolen, a small town northwest of Brussels. Alsos' mission was to get to Belgium without delay, determine where any stocks of refined uranium ore were located and in what amount, and seize any available supplies.

The Germans were still in the area. In actions worthy of some blood and thunder novel, braving rifle fire and mortar shells, Alsos reached its objective. Hastening in anticipation of a German counterattack, Pash and his men found 70 tons of refined uranium ore. Records indicated that the Germans had removed some 1,000 tons, and that the Belgians way back in 1940 had shipped more than 80 tons to France. This last bit of information resulted in a later chapter for Alsos.

The Alsos scientists now surmised that the next piece of the puzzle was to be found in Holland. The Phillips Works in Eindhoven, a large and modern electronics plant, was expected to yield specific documents relating to research activities at German research centers. Pash's assignment was to confiscate any such documents and to bring two of the top scientists from Phillips and Brussels. The corridor to Eindhoven had been opened by the US 101st Airborne Division the day Alsos moved in. Success was becoming almost routine.

The question of the missing uranium ore was the next order of business and a bit more complicated. The shipment had been traced by the Alsos CIC group to a warehouse in Toulouse. It had been sitting there since 1940 and nobody apparently knew what it was. The great obstacle confronting Alsos here, however, was the Free French. Pash couldn't quite accept the authenticity of some of these French "partisans" whom he described as coming out for the victory parades to "fight" when the fighting had already been done by others. He had apparently been sensitized to these fair weather patriots from his own bitter experiences in Russia in 1918-20. Author Pash does not, however, generalize against the French effort in World War II, and on the contrary expresses his appreciation for those who contributed. His mission to

Toulouse received such support and he describes with warmth and affection his association with French patriots, some of whom remain his friends to this day. The end result was again a success. He literally stole the barrels of processed uranium from under the noses of the French authorities who controlled the general area, and overcoming obstacles of US Army bureaucracy managed to ship it all to Marseilles via the "Red Ball Express" and eventually to the United States. Pash later learned that the Oolen shipment and the subsequent shipment found at Toulouse were eventually dropped on Hiroshima—"in somewhat altered form, to be sure."

The war was beginning to go very badly for the Nazis and Alsos began to pick up some of their targeted German scientists. A Nazi named Peterson who had been with the War Materials Office in Paris had been linked with some activity relating to thorium and had a connection with the over-all German atomic research picture. He was tracked down and captured in his secretary's home in Belgium. A priority list was drawn up on German scientists. Heading the list at that time was a Dr. Fleischmann, who handled German nuclear research in Strasbourg, Dr. C. F. von Weizsacker, a couple of other nuclear scientists, Dr. Von Haagen, the Nazi BW man, and finally several specialists in various other fields.

The targets fell like dominoes—first Fleischmann was taken in Strasbourg and eventually others on the list. The story of each one of these could serve as the basis for a Hollywood scenario. The picture of German nuclear research was beginning to take shape.

American armies were in Germany and organized German fighting was drawing to a close. Diehards who called themselves "Werewolves" had resolved to fight to the death and constituted a threat not only to Alsos personnel who were everywhere in Germany by that time but to some of the German scientists themselves. In addition the specter of the Red Army closing in from the East loomed even larger. The Soviets themselves had their own task forces trying to capture some of the elusive scientists and to "liberate their laboratories and their research." It thus became even more critical for Alsos to bring to a conclusion the mission it had began a year and a half earlier. Otto Hahn, one of the best known scientists, a Nobel prize winner in chemistry in 1944, was found in Tailfingen with his entire staff, followed by Drs. Gerlash and Diebner. With the exception of Dr. Werner Heisenberg, chief of the Nazi nuclear program, also a Nobel prize winner, Alsos had taken into custody every German scientist whose name appeared on the "wanted" list. The entire German atomic pile with all related equipment and documents were in American hands. General Eisenhower's radio to the Pentagon reported "Boris Pash has hit the jackpot." It added that the success of the entire operation exceeded the wildest hopes. The Alpine

Redoubt was the last big objective and the top German scientist Heisenberg was the target.

The capture of Heisenberg was inevitable. Alsos had become a well-oiled machine. Elements of an SS force totaling over seven hundred men surrendered to Pash and his small task force. The only casualty of that operation was the commander himself, Pash, not from "Werewolf" rifle or mortar fire but by an "enemy" mule who had been part of the German mountain division. It was an amusing although painful finale to the most exciting chapter of Alsos.

The remarkable story of Alsos is now history. There are other exciting incidents in the book too numerous to mention in this review, but certainly worthy of the reader's attention. The story was written by the man best qualified—the task force commander who helped create and who carried through the mission to fruition. The personality of Pash and the warm bond of affection that existed between him and his "Alsos boys" becomes quite evident to the reader. This bond is not a literary creation but did exist as it often did in small groups depending on each other for the success of their mission and often for their very lives. In my own personal experience when invited into Pash's home in the years since Alsos, I would inevitably hear that one of his "Alsos boys" had been by or he had just received a letter from one of them. This human trait of genuine affection, and esprit de corps was undoubtedly a major contributing factor of its success.

Alsos found that the worst of fears fortunately had not been realized. The Nazi research effort had not been ahead of the Manhattan Project primarily because of neglect of priority in the critical early years. Alsos had been successful in this final assessment and perhaps had its greatest triumph in depriving the Soviets of access to the German effort.

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