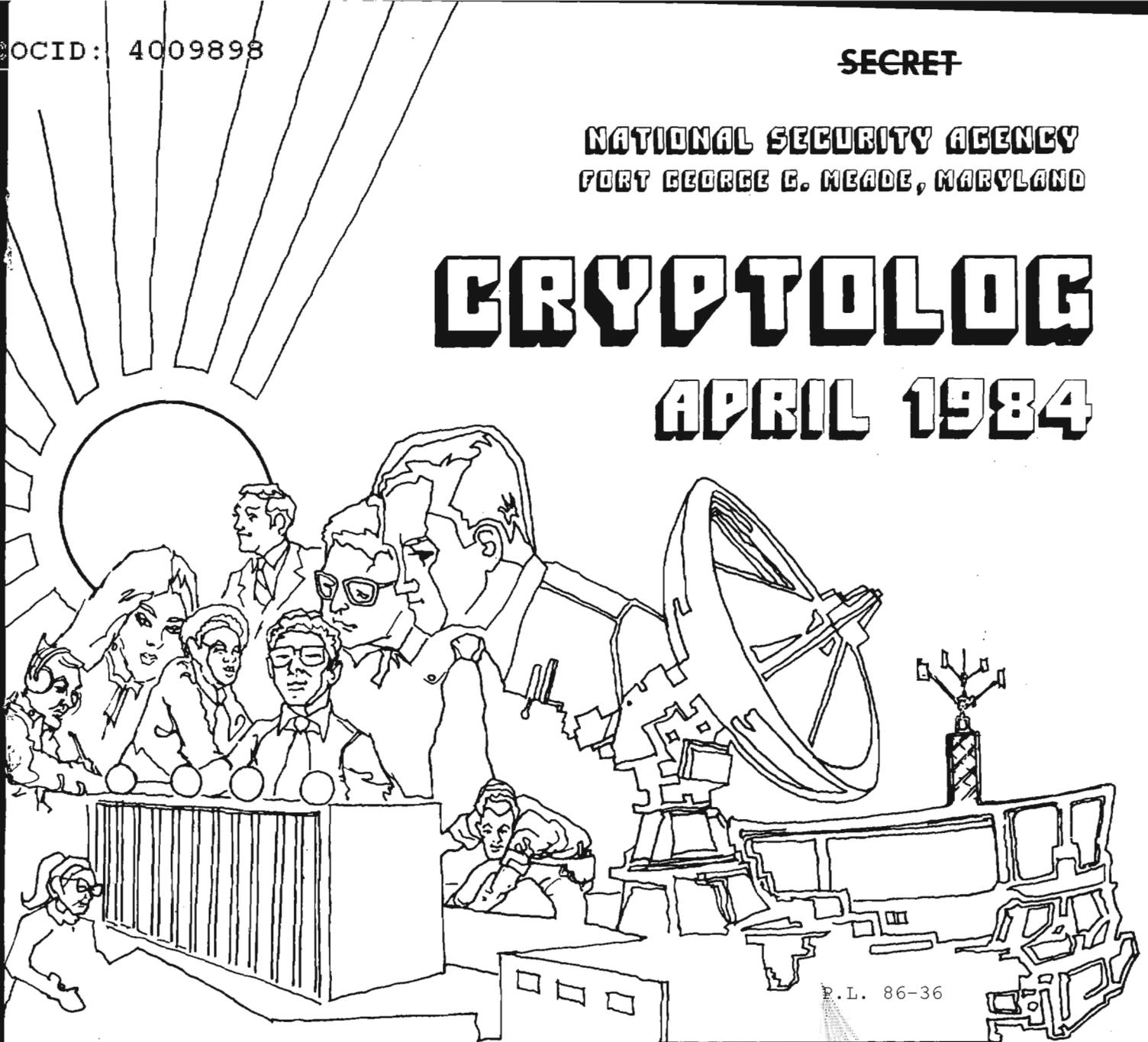


NATIONAL SECURITY AGENCY
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CRYPTOLOG

APRIL 1984



P.L. 86-36

OIL AND DEVELOPMENT:

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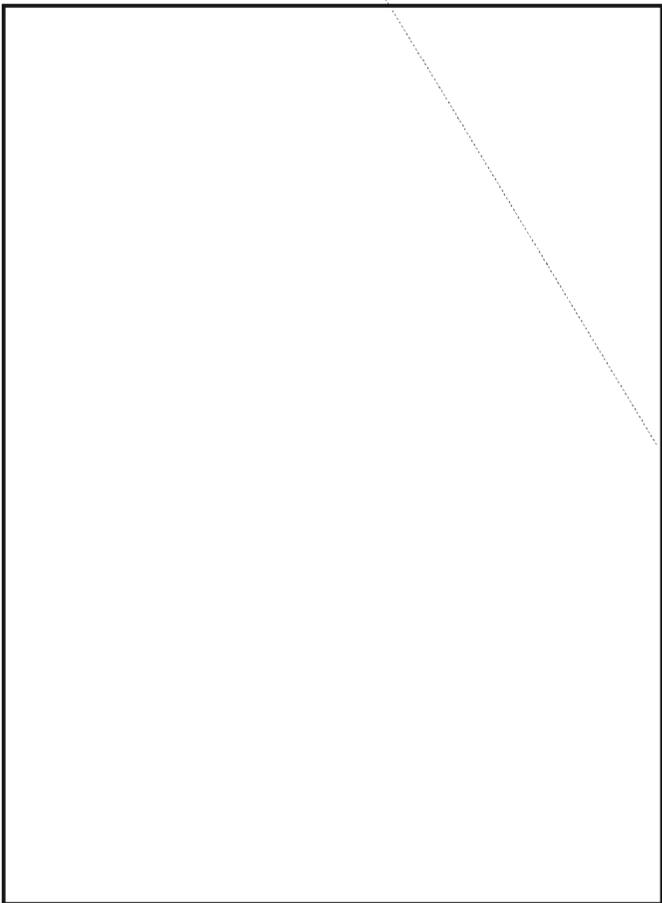
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OIL and DEVELOPMENT:

Effects on Nigerian Economy (U)

by S041

P.L. 86-36

I. INTRODUCTION

(U) Since 1974 the significance of petroleum has become increasingly more apparent to developed and developing nations alike. The phenomenal rise in the international market price of crude oil, which began to grow in geometric proportion following the 1973 Arab oil embargo against the United States, has heightened the awareness on the part of individuals and nations of the power of oil as a political and economic weapon. Industrialized and non-oil-producing developing nations suffered the shock waves of OPEC[1] price hikes beginning in 1974--and many have yet to recover. Some oil-producing nations, on the other hand, have until recently experienced the economic "boom" of increased national revenues and expanding international prestige.

(U) The current oil glut and resultant "soft" market for crude, however, is beginning to reverse that trend. Though economic recovery is not on the horizon for many non-oil-producers as a result of the increased availability and lower prices of petroleum, the opposite is true for some of the oil-producing nations. The sudden decrease in oil is causing slowdowns--and, in some cases, stoppages--of ambitious national development plans predicated on constant or increasing oil revenues.

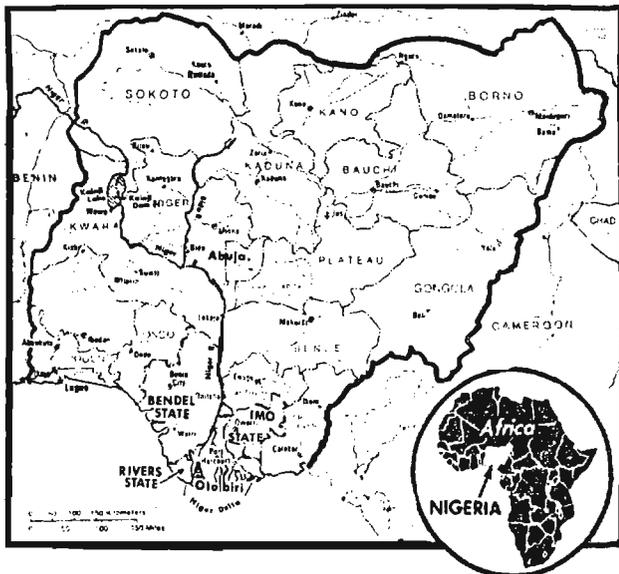
(U) A case in point is Nigeria. Oil--Nigeria's most significant revenue-producing resource--has in recent years become the

(U) This paper was awarded First Prize in the 1983 Essay Contest of the International Affairs Institute.

backbone of that nation's economy. As of mid-1982, exports of Nigerian crude oil accounted for 90 percent of the country's foreign exchange earnings and approximately 80 percent of government revenues.

(U) Oil had transformed Nigeria from a developing country whose economy was constantly "in the red" (pre-1966) into a nation enjoying large surpluses--until lately. Oil revenues have become the most significant factor in Nigeria's economy--both in the positive and in the negative sense. For the trend toward ever-increasing reliance on oil revenues to finance national development plans, which seemed to be a logical course of action in the mid-1970s, is now confronting the vagaries of the international crude oil market, making future oil revenues unpredictable at best.

(U) This paper will attempt to sketch the history of petroleum as a facet of the Nigerian economy, its effects on national development plans, and the impact of the fluctuating international crude oil market on the implementation of Nigeria's projected development program.



II. GENERAL HISTORY

(U) Although Nigeria has been producing oil in sufficient quantity for export since 1948 and has only been a member of OPEC since 1971--interest in oil and earnest exploration efforts date back to 1937, when geological and geophysical investigations were first conducted by Shell-British Petroleum (Shell-BP). The search for oil in Nigeria actually began in 1908 but was abandoned shortly afterwards. Efforts were revived by Shell-BP in 1937 and drilling operations commenced in 1951. Nigeria's first commercially productive oil field was discovered in 1956 at Oloibiri in the Niger delta. Production levels grew gradually, and Nigeria's first export of crude oil took place in 1958 from the newly constructed port and terminal facilities at Port Harcourt.

(U) Petroleum rapidly became Nigeria's principal and most lucrative export, and by 1965 foreign exchange earnings eclipsed those from cocoa, formerly its leading export commodity. During the period from 1957 to the start of the Nigerian civil war (1967), 176 oil deposits were identified and over 600 wells were drilled--with a success rate of nearly 70%. Shell-BP's exploitation efforts focused primarily on what was formerly known as the Eastern region of Nigeria, and onshore oil production grew rapidly until the civil war brought it to a virtual standstill. By 1966 production had reached 20.7 million tons and petroleum exports constituted 33 percent

of Nigeria's total exports. Foreign exchange earnings from these exports continued to rise from that point on (after a brief hiatus during the civil war), and since 1973 oil export earnings have accounted for 90 percent of Nigeria's total export revenues.[2] Much of this can be traced to the rising price of petroleum on the world market since 1974, rather than to significant increases in export volumes.

(U) As of 1981, there were approximately 140 producing oilfields both onshore and offshore. Most are located in the Niger delta region, primarily in Bendel, Rivers, and Imo states. Estimates of Nigeria's total proven reserves range from 17.5 billion to 20 billion barrels. Exploration is being promoted in other parts of the country and promising new areas include the Anambra, Benue, Bida, Lake Chad, and Sokoto basins.

III. FOREIGN OWNERSHIP

(U) The issue of foreign ownership, and hence--from the perspective of a Third World developing nation--foreign control, played a part in the evolution of the oil industry in Nigeria. As noted earlier, Shell-BP was the dominant actor in the Nigerian oil sector both pre- and post-independence. As the colonial ruling power, Great Britain naturally bore the brunt of foreign investments in Nigeria, and the oil industry--the showcase of the Nigerian economy--was the most prominent example of "foreign domination." During the 1950s Shell-BP invested over \$300 million in exploration, wells, pipelines, and a refinery--"a sum that represented 85 percent of all new foreign investment during the period and exceeded the total investment in [the] Nigerian manufacturing industry." [3] Such heavy foreign investment in the burgeoning oil sector can be viewed both positively and negatively.

(U) Surely the input of financial and technological resources in the early developmental stages helped to create an oil industry which is today a major factor in Nigeria's rapid development. The combination of Nigeria's precious natural resource and Britain's infusion of capital and technology formed a viable, productive industry which has helped to pave the way toward modernization of the Nigerian state.

(U) On the other hand, the growth of nationalism in Nigeria--and its emergence as a political factor after 1960--led to a sense of "foreign domination" of the nation's economy. The oil boom of the 1950s and 1960s left the Nigerian economy even more dependent on outside control than it had been before this

period. John Hatch goes so far as to state that

"Oil revenues played an important part in the conflict leading to the civil war; it seemed probable that [the] Nigerian government would become increasingly dependent on the revenues gained from the oil companies, with all the consequences to national economic policy." [4]

(U) By 1971 Nigeria was the world's seventh largest producer of petroleum. In that year the nation joined OPEC. At the risk of oversimplification, these factors--growing nationalism, rising production and revenues, and association with other oil-producing nations in a commodity cartel--converged after a divisive civil war and resulted in the beginning of a Nigerian takeover of the oil industry.

IV. INDIGENIZATION

(U) After its bloody civil war, the Nigerian government, as part of its consolidation and rebuilding efforts, announced its desire to take over a controlling interest in the operations of the petroleum-producing companies in Nigeria. [5] The manner in which this was accomplished in no way resembled the abrupt "nationalizations" which occurred in some of the other Third World nations endowed with marketable natural resources, but rather was an expression of Nigeria's recognition of its own mineral wealth and its intention to exercise more control over its own natural resources.

(U) After the establishment of the Nigerian National Oil Company (NNOC) in 1971, and in a relatively orderly process of "indigenization," the Nigerian government began in 1973-74 to negotiate the gradual purchase of majority interest in the foreign oil companies. In 1977 the NNOC was replaced by the Nigerian National Petroleum Corporation (NNPC), which was granted broader powers regarding commercial activities in the petroleum sector. By mid-1979 NNPC had increased its holdings to 60 percent of all foreign oil operations.

(U) The only actual instance of "nationalization" of a foreign oil company took place in 1979. As a result of Nigeria's belief that Shell-BP was "supplying crude oil, by subterfuge, to South Africa in total contravention of Nigeria's stand against all dealings by international firms with that country," [6] NNPC nationalized BP's 20 percent share of the producing organization and its 40 percent equity in the joint NNPC-BP marketing organization. Arrangements were later made to compensate BP, however, and other oil companies

were assured that this action did not presage a wave of nationalizations "as long as the companies respected Nigerian policies and sensitivities." [7]

(U) Thus, despite one case of nationalization (which, from the Nigerian perspective, was politically justified), Nigeria peacefully regained control of its oil resources, avoiding the trauma and potential loss of technological and marketing expertise which could have occurred if more dramatic measures had been taken.

V. ROLE OF OIL IN DEVELOPMENT PLANNING

(U) Economic planning is not a recent phenomenon in Nigeria, though the effects of oil revenues on national plans are relatively new. Structured economic planning has a long history in Nigeria. The first 10-year development plan was adopted in 1946 and was supplanted in 1955 by a British-devised program which addressed each of Nigeria's (then) three regions separately. In 1960 the new independent Nigerian government inherited the colonial plan, deemed it fragmented and inappropriate, and replaced it in 1962 with the First National Development Plan (1962-68). Some large government-sponsored projects were completed under this program, including the country's first oil refinery, paper and sugar mills, and the Kainji Dam and hydroelectric station, but government revenues were at this point largely unaffected by the still-nascent oil industry.

(U) The Second National Development Plan (1970-74) was geared to the reconstruction of war-torn Nigeria. Despite some government investment, major setbacks in agricultural production during the first half of this planning period decreased output and caused the beginning of what are now chronic food deficits. The Second Plan was extended to cover FY 1974-75, during which time the monumental rise in world oil prices filled the Nigerian coffers.

(U) The nation's sudden increased wealth translated in the Third National Development Plan (1975-80) into a grandiose blueprint for accelerated national growth. The Third Plan set public investment levels at ₦26.5 billion (c. \$40.3 billion), eleven times greater than the government's actual capital expenditures on the Second Plan. The focus of development spending was on transportation, heavy industry, and education. Agricultural expenditures were increased, but they were still inadequate to reinvigorate the sector. Among the successes of the Third Plan were an increase in cement-producing capacity, two new oil



refineries, port construction and expansion, new airports, power-generating facilities, and new industrial facilities.

VI. FOURTH (CURRENT) DEVELOPMENT PLAN (1981-84)

(U) Despite the fact that oil revenues had begun to decline before the conclusion of the Third Plan and that resource restraints postponed some programmed expenditures and curtailed others, Nigerian government officials expected to move deferred projects into the Fourth Development Plan. As recently as April 1982, the American Embassy in Lagos [8] outlined the major components of the Fourth Plan, which includes:

- [] Expanded agricultural development;
- [] Agribusiness, manufacturing, and infrastructure projects;
- [] A multibillion-dollar new federal capital project at Abuja;

- [] Construction of 2,000 housing units annually in each state of the federation;
- [] Electricity generation, transmission, and distribution facilities; and
- [] Federal medical centers in six states

(U) This expansive program is already running into difficulty as a result of the reduction in worldwide demand for oil which had caused Nigerian foreign exchange reserves to fall to an estimated \$4 billion by early 1982. Clearly the continued slide of crude oil prices & decreased production production levels will demand at least deferral of many of Nigeria's economic and infrastructure development projects.

(U) Indications that the Fourth Plan will not be met began to appear in late 1982, when budget proposals for 1983 first became known.

VII. EFFECTS OF SLOWDOWN IN THE INTERNATIONAL OIL MARKET

(U) The glut of oil on the international market in the early 1980s was countered to a degree by OPEC's decision to impose production

ceilings on member nations in an attempt to tighten availability and thereby prop up slacking oil prices. Nations such as Nigeria reluctantly agreed, reasoning that this move would result in smaller revenue losses than would occur if production levels were maintained and prices plummeted. OPEC's efforts were undercut somewhat, however, by the non-OPEC oil-producing nations (e.g., Mexico, Great Britain, Norway), and world oil prices continued their gradual decline.

(U) The effects on Nigeria's economy in general, and on its infrastructure and industrial plans in particular, can be seen most clearly in the nation's budget statistics for 1982 and 1983.[9] The 1983 budget presented to the Nigerian National Assembly will be ₦9.3 billion (c. \$13.5 billion), 20 percent lower than the figure presented in the previous year's budget projections. Of this figure, projected oil income will represent only about 59 percent of the nation's total revenues. In the years 1973-80, oil revenues accounted for 80 percent of government revenues.[10]

(U) At the same time President Shagari presented the 1983 budget proposal, he submitted to the National Assembly revised figures for 1982 which reflected a 37 percent drop in oil income by 1982.

(U) More than a third of Nigeria's budget covers recurrent expenditures which would be difficult to trim. Significant shifts will occur in order to accommodate reduced revenues and, in the more flexible capital portion of the national budget, heavy reliance will be placed on foreign borrowing (c. \$5.5 billion). In view of Nigeria's current international current international debt of \$15 billion[11], the nation's borrowing plans are optimistic.

(U) Nigeria's proposed 1983 capital expenditures represent only a 5 percent decrease from 1982 levels, despite an estimated oil revenue shortfall of 21 percent since 1981. The effects of reduced oil revenues on infrastructure and economic development plans are compounded by a projected threefold increase in defense spending for 1983. Although capital expenditures for agricultural projects in general will increase slightly, funding for the Nigerian Industrial Development Bank was cut by almost 80 percent, the allocations for the Sunti sugar project has been reduced 70 percent from the 1982 level, and the government's scheme to finance small-scale industries will be cut to less than 20 percent of its 1982 budget allocation.

(U) Not all infrastructure expansion plans will suffer budget reductions. The transportation sector will investments for land, water, and air transport systems, but the 22

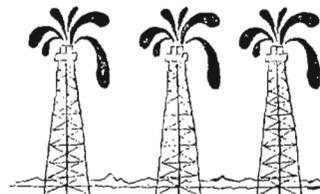
percent increase in this sector will be at the expense of other sectors of the economy (health, education, housing). Capital investments in the energy sector will also increase, but will focus on the development of the petrochemical industry and expansion of the Port Harcourt refinery, as opposed to investments in exploration and transport. In conjunction with this emphasis, the Nigerian government expects to achieve a significant increase (80 percent) in income from NNPC direct sales to oil lifted by the producing companies, indicating a planned move to cut supplies available to the producing companies and to increase NNPC's international marketing efforts.

VIII. OUTLOOK

(U) In view of the trend toward almost total reliance on foreign exchange earnings from oil to finance its national development plans--and a simultaneous neglect of its agricultural sector--Nigeria must now hope for a quick turnaround of the international oil market in order to fulfill its dreams of modernization. Government and industry analysts do not predict a firming up of the market in the immediate future, however, and according to the US State Department's assessment:

Even assuming a pick-up in oil production ... the country still faces an estimated US \$6 billion in short-term trade arrears to pay off, long-term debt servicing on the order of US \$2 billion per year, and an annual food import bill of perhaps US \$1.5 billion. In short, unless Nigeria's oil revenues increase to the US \$8-10 billion range, there will be little discretionary income available for major new development projects and the purchase of raw materials and spare parts for industry will be constrained.[12]

(U) Based on both the negative prospects for a rapid recovery of the international oil market and the improbability of Nigerian success in the world's capital markets, the likelihood that the Fourth National Development Plan's goals will be met is minimal. For it is estimated that, even if oil revenues increase, they will not again reach the peak levels registered in 1979-80, making deferment of major portions of the Fourth Plan necessary. Many of the projects listed in the Plan have already been slowed down or suspended so that the scarce financial resources can be applied to the servicing of existing debts.



(U) For the short term, the pace of economic development in Nigeria will depend on the rate of recovery (from the nation's standpoint) of the international oil market and the willingness of banks and international lending institutions to extend their risks through further investment in the Nigerian economy. As the US Embassy, Lagos, states:

The Nigerian economy is presently severely depressed and may experience significant changes. Nigeria's almost total dependence on oil as a source of income makes the country extremely vulnerable to shifts in world crude markets. The currently unsettled situation in those markets, coupled with Nigeria's precarious foreign reserves position and the tightness of world financial markets make the market prospect for Nigeria bleak in the short term.[13]

IX. CONCLUSIONS

(U) The main conclusion which must be drawn from the foregoing is that, despite thwarted attempts at industrial diversification, Nigeria is still overly reliant on oil--an unstable and uncontrollable revenue source--for development financing. It is likely that Lagos will weather the current storm, albeit through austerity measures and deferment of development goals, but longer-term economic planning for Nigeria must take a decided shift away from dependence on a single source of government revenues.

(U) At the same time, a more concerted effort must be launched to revitalize the country's agricultural sector. Heavy imports of foodstuffs continue to drain the nation's reserves, while a once agriculturally rich country expends billions of dollars to feed its populace. Nigeria must redouble its efforts, even during this current period of reduced revenues, to improve agricultural productivity. Achievement of self-sufficiency in this sector could ease the strain on financial resources and improve the overall balance-of-payments ledger for Nigeria.

(U) In all, it appears that austerity measures will alleviate the short-term financial crisis in Nigeria, but an overhaul of the nation's economic planning apparatus will be needed to ensure attainment of future national development goals.

NOTES

1. Organization of Petroleum Exporting Countries, a 13-member cartel of oil-producing nations established in 1960.
2. Provisional value figures for Nigerian exports for 1979 totaled some ₦10.7 billion. Of that total, petroleum export values accounted of ₦10.2 billion. Harold D. Nelson, ed., Nigeria: A Country Study (4th ed., Washington, DC: American University, Foreign Area Studies Division, 1982), p. 294. Exact currency conversion rates for the naira (₦) for 1979 are not available. As of 1983, however, ₦1 = US \$1.45. At that rate, 1979 oil export values were over US \$14.7 billion. State Department cable, Lagos, 11731-82 (171446Z Nov 82).
3. John, Hatch, Nigeria: The Seeds of Disaster (Chicago: Henry Regnery Company, 1970), p. 269.
4. Ibid., pp. 269-270.
5. Although Shell-BP dominated the field, other international firms were active in oil exploration and exploitation efforts in Nigeria from 1965 onward. For example, offshore exploration in the Okan field was undertaken by the Nigerian Gulf Oil Company in 1965. French, Italian, and other US firms were also active in commercial exploitation. See Nelson, op. cit.
6. Nigeria: A Country Study, p. 166.
7. Ibid., p. 167.
8. For a more detailed description of all the elements of the Fourth National Development Plan, see the State Department cables Lagos 02990-82 (070740Z Apr 82) and Lagos 02596-83 (011739Z Mar 83).
9. A detailed account of the Federal Government of Nigeria's 1983 budget proposal is contained in State Department cable Lagos 11731-82 (171446Z Nov 82).
10. (U) As of February 1984 Nigeria was producing 1.6 million barrels per day (b/d) of oil, which is 300,000 b/d over its OPEC quota. This excess production was being "permitted" informally by OPEC in order to help Nigeria with its massive debt problem and its severe foreign exchange deficit. It appears that the new government will again fall into the trap of reliance on oil production revenues to repay debts.
11. The Washington Post, May 15, 1983, p. F1, col. 1.
12. State Department cable Lagos 02596-83 (011739Z Mar 83).
13. ibid.

THE BEST HOPE STILL



Arms Control in the Wake of KAL 007(u)

by

P.L. 86-36

As I walked into my office one morning shortly after the shutdown of Korean Airlines flight 007, one of my coworkers, an army sergeant first class, looked at me with a devilish grin.

(U) "What do you think of the Soviets now?" he asked, gleam in his eyes.

(U) I sighed heavily but said nothing. I knew what he meant. The shutdown was a defenseless act and in his eyes I am a staunch defender of the Soviet Union. After all, hadn't I been the one who suggested that perhaps the Soviet Union is not responsible for all the acts of terrorism in the world? That maybe the United States is not altogether blameless in the ever-escalating arms race? Hadn't I also intimated that the Soviet Union may not be an "evil empire," but rather simply a cultural and political system alien to our own? That peace between our nations through negotiations, though a long and arduous task, might be possible? Yes, I had suggested each of these. And now, by one act, the Soviets had proven that I was wrong. Their crime against humanity was the final piece of evidence that would convict them of being, in the final analysis, a malevolent aggressor whose only interest is to amass power and territory regardless of the human cost. My helpless silence seemed to satisfy the sergeant, and the subject was dropped.

(U) Since then I have often considered this widely-held interpretation. Was the shutdown a calculated act by the Soviet government? Was it so reprehensible that all attempts at negotiating an end to the arms race and erstwhile "cold war" should be stopped? We

may never know the answer to the first question, but the answer to the second is an emphatic "No!"

(U) Arms control is like a living, breathing organism. It is the result of a long, painful birth during the late 1960s and early 1970s. It has lived a very precarious life since then, almost constantly "on the brink," as the Soviets have attempted to strangle it to death at various times, while the US has simply hoped that it will die of neglect.

(U) It was, of course, the United States which initiated arms control over two decades ago. The "Hotline" agreement and the Limited Test Ban Treaty of 1963 were the first formal accords between the two superpowers. The US initiated them not for idealistic purposes but for pragmatic purposes: international security was becoming increasingly unstable due to the proliferation of nuclear weapons and own survival was at stake. The Soviet Union was equally pragmatic, accepting the accords as favorable to their own national interests. It would hardly be fair of us, after all, to expect them not to be predominantly concerned about themselves. This does not threaten our interests but is merely "business as usual" in political exchange. In 1967 President Johnson proposed a ban on ABM systems and the idea was summarily dismissed by Alexei Kosygin. Five years later, however, a treaty limiting ABMs was incorporated into the SALT I agreements. Thus had Soviet interests changed. And so does the arms control process continue on both sides. So negotiations have continued as negotiations will continue: at a snail's pace, changing only as perceived interests change. But the payoff began with the ratification of SALT I.

(U) In 1972 an arms control "contract" was signed by our two nations, the importance of which far exceeds the word of the agreements. Richard Nixon and Leonid Brezhnev did not only commit their nations to certain "counting rules" concerning nuclear missiles when they signed the SALT I Treaty, but they agreed to enter into a cooperative relationship to reduce the threat of world destruction. The relationship exists to this day. For even as the Soviets propagandize their opposition to the United States and President Reagan rails against the "evil empire," each side is careful to protect that relationship for fear of what might result if the contract is broken. Robert Kaiser of The Washington Post wrote in June 1983 that that contract is "the real measure of the danger of Soviet-American relations" and "despite the temperature of public rhetoric ... As long as it holds, we are not reverting to the bad old days, no matter what the atmospherics are like." That is why, despite the absence of a legal treaty, the conditions of the SALT II agreements are observed by both sides.

(U) So who benefits from this contractual relationship? Many people express concern that the contract favors the Soviet Union. In negotiations, the US seems to make concessions while the Soviets give up little. The Soviets continue to reject our proposals, make few "realistic" proposals of their own, and yet keep us on the defensive at the negotiating table. Why is this so? It is so because the Soviet nature, by its very nature, is a manipulative one. And, as maddening as that is for us to deal with, therein lies the road to agreement. We are people from antithetical systems. Friendship may be impossible. So be it! Distrust is a two-way street and just as we find their system incomprehensible, so do they find ours. Patt Derian, Assistant Secretary of State for Human Rights in the Carter Administration, wrote in The Washington Post on June 9, 1983:

The longer both sides believe they are dealing with madmen, the likelier one will choose to go down fighting.

(U) By making an attempt to understand Russian history and culture, however, we can see that there is ample reason for their xenophobic paranoia. Our own political history and ideology, on the other hand, demonstrate that we can afford magnanimity. We can afford to be more flexible than the Soviets. Indeed, we can't afford not to be, since they will not be. If we are serious about arms control, we must accept this role. In the process, we will hope not to "change their ways"--which is a naive goal--but rather to draw them out of their paranoiac shell and into the world com-

munity. When we have accomplished this, we will have reached a milestone toward world peace. In the meantime, we all benefit from the fruits of arms control.

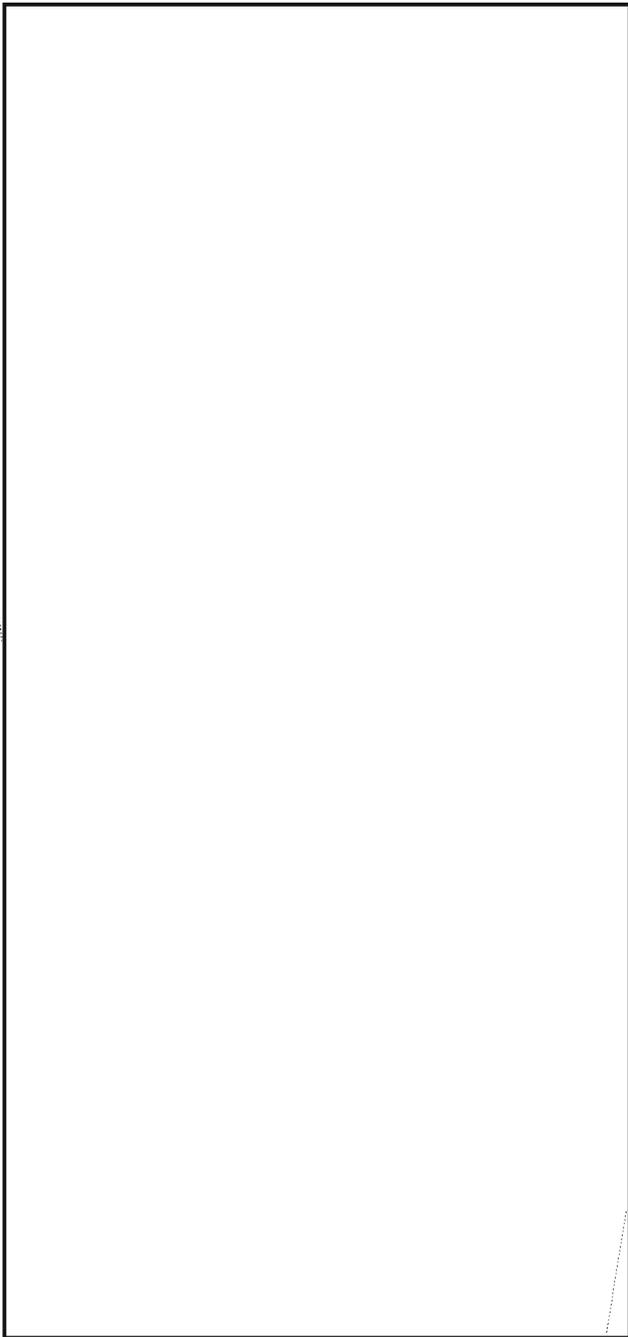
(U) But still we are confronted with the stark reality of Soviet foreign policy, which even to a discerning eye is the world's most aggressive. The invasions of Hungary and Czechoslovakia were defensible from a Soviet viewpoint, if hard to swallow for Americans whose ideals include the right of a people to choose their government. The Afghanistan invasion was more tenuous, harder to justify even from the Kremlin, but so far clearly a less "successful" one for them than previous incursions.

(U) There is no reasonable defense, however, nor is one forthcoming from Moscow, for the shutdown last summer of a commercial airliner. The "plane full of spies" story is hardly reasonable. Even the facts are sketchy.

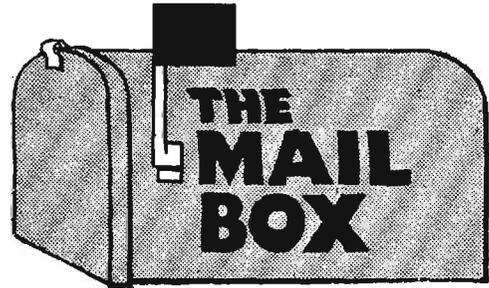


(U) At about 3:00 a.m. local time on 31 August 1983 Korean Airlines flight 007 had, for some still unknown reason, flown off course over the North Pacific Ocean near the USSR while flying from Anchorage, Alaska, to Seoul, South Korea. It flew into Soviet airspace, passing over the Kamchatka Peninsula. When it did that, it was in violation of international rules of law and aviation. Soviet fighter aircraft in the area did not intercept the 747, again for unknown reasons. The airliner proceeded on a southwesterly course over the sea of Okhotsk until it reached Sakhalin Island, where Soviet fighters reacted to it, intercepted it, and shot it down. The 747 fell into the Sea of Japan and 269 people were

dead. The world still wonders how such a tragedy could have happened.



by abandoning all prospects for arms control. If nothing else, let this tragedy awake us to what is really at stake. Although our nations as they exist today may never be able to live together completely free from discord, the opportunity to reduce the mutual feeling of threat between us and to bring security to the world through negotiation of our crucial common interest in arms control is still the best hope for world peace.



Subject: Article request P.L. 86-36
To: cryptolg at bar1c05

EO 1.4.(c)
P.L. 86-36

[Redacted]

(C) My name is [Redacted] and I'm the editor of F88's PROFESSIONAL ASSOCIATION NEWSLETTER. Our Professional Association is basically a chapter of the Agency's Collection Association and made up of the collectors and other personnel [Redacted] I just read your December 1983 issue of the CRYPTOLOG and would like your permission to include [Redacted]

[Redacted]

in our June issue.

(C) Our PROFESSIONAL ASSOCIATION NEWSLETTER is relatively new and, since F88 has a rather small field (pardon the expression) to draw on, articles can be hard to come by. We've published one issue (March) this year and plan one for June.

(U) That night 269 people died. It was a tragedy, but equally tragic is the fact that many people believe that all hopes for arms control and world peace died also died that night. Many Americans are now prepared to abandon our attempts to deal peacefully with the Soviets, but deal with them we must. Although our initial reaction to the shutdown was rightly one of horror and outrage, we cannot allow the deaths of the 269 to be in vain

(U) Thank you for any assistance you can provide,

P.L. 86-36
EO 1.4.(c)

Regards,

[Redacted]

GOLDEN

GOLDIE (U)

Now, it is very much to the interest of the cryptanalysts to learn the personal habits of the encoders. A division in the Chemin des Dames sector, in 1918, made it a practice to require of the regiments in the line a brief report every morning. Frequently the report was drawn up in this form: "Night calm, nothing to report." When the code book was changed, the routine practices did not change and the same text was the subject of numerous messages, which could be classified, thanks to their being encoded in exactly the same way. The capture of even an obsolete code book enabled the enemy to read cryptograms belonging to this daily series which were repeated and, even if these were dated some time back, this helped the specialists to make a hypothesis as to the meaning of groups in messages of a similar style, transmitted under similar conditions, and encoded with the new code book. Now almost always the great difficulty in studying code is the identification of a few first groups. This is what is called finding an entrance or getting a start. With an entrance effected, and a thousand groups, a number quickly acquired on the front during the last war, the cryptanalysts are full of hope in the success of their task. We have not found any statistics as to the number of telegrams in code collected in one day, but the days at the beginning of the war, or during the attacks of 1918, when the posts of the major units furnished us 60 messages are not rare, and many of these telegrams have more than 20 groups. What is to be said then of the transmissions of the small units?

The repetitions of formulas composed of the same words, placed in the texts at places known to cryptanalysts is therefore especially favorable for the latter in case the code book is changed. These are the formulas which have been called "stereotyped." We must include therein the forms: "I have the honor to ..."; short telegrams acknowledging receipt of communications or requesting repetition of untranslatable [undecipherable] telegrams; references such as "in continuation of telegram," "in reply to," "to follow"; too numerous indications of punctuation such as

This is an extract from "Problems of Code" by Colonel Marcel Givierge, French Army, which first appeared in the Signal Corps Bulletin No. 34, May 1926.

"Paragraph 2," "Paragraph 3," "end of message"; grammatical indications such as "three large (plural) man (plural)," etc. We have taken here as the subject of the article only field cryptograms, but it is known that the code section has always had good success in decoding diplomatic matter, in which, among others, distinction was achieved by Captain Bassières...and the reserve interpreter Déjardin...The studies in this branch were especially aided at the beginning by long service designations at the head of telegrams and by final formulas indicating the office of origin. The numbering was the basis of hypothesis which made possible the long-sought "entrance" into the first German code reconstructed--that for communications with submarines; and alternations of numbers in clear and numbers in code, assumed to be such because the text had no number in clear at that time, served as a point of departure of another code. ...

We have shown the danger of stereotyped formulas. Without using any formula of this kind, however, the text of telegrams contains numerous repetitions. We are not speaking only of frequent words, prepositions, or auxiliary verbs, for which various equivalents may be assigned in the code book, enabling us to employ now one group and now another, but of names of places, of units, etc., which in the course of an action will recur frequently in the dispatches. Encoded ordinarily by words or by syllables, these terms give rise to repetitions of groups which attract the attention of the cryptanalyst. The latter compares these series of groups of names on which it is possible to build hypotheses. In many cases, he secures in this way means of cross reference--for example, syllables common to several names appear in each series of groups. He then possesses an entering wedge.

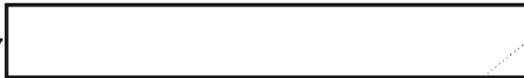
RESERVATIONS

about the

MBTI



by



P13

P.L. 86-36

[redacted] sent me the following brief admonitory comment on the Myers-Briggs Type Indicator, the personality inventory described in the November 1983 issue of CRYPTOLOG:

"I must admit that I have reservations about [the broad application of the MBTI to management]. I believe it reveals more about a person's private side than an employer needs to know. It also could be dangerous in the wrong hands.

"While I agree with Mary that working with highly compatible people is pleasant, it leads to a very narrow mindset called 'group think.' This can result in waste when the same old ideas/solutions are used repeatedly without questioning or searching for other possible alternatives because 'the group thinks it's a great idea.' I think everyone and every group needs a devil's advocate to spark creativity."

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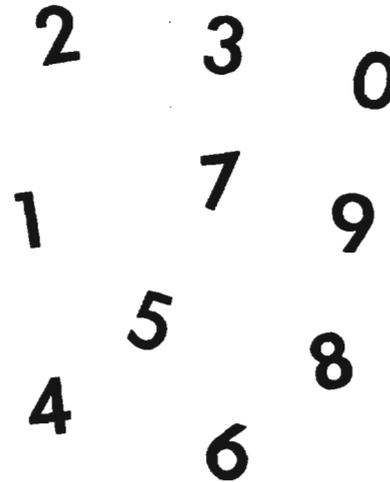
I appreciate the interesting and provocative questions [redacted] has raised and the opportunity for further discussion of some points that were probably misleading in my article. I certainly agree wholeheartedly that every tool can be misused; in fact, every tool inevitably WILL be misused by a number of shortsighted businessmen and administrators trying to take ruthless shortcuts to profits, or trying to pare down their budgets. I feel, however, that the MBTI is considerably LESS likely to be abused in truly destructive ways than most other psychological instruments already current in both the private and public sectors. It is possible that a company might

decide that it wanted only "ENTJs" at the upper management levels, "ESFJs" at middle and lower levels, and "INTJs" in the Accounting Department, for example. Instead of using the test as an INDICATOR, to give them data to be factored in with other data from interviews, resumes, their own experience, etc., the hiring decisionmakers in this hypothetical company might set up cutoff scores on the four type dimensions and refuse to hire anyone lacking the requisite patterns at or above those scoring levels. That would be an abuse of the MBTI, and a highly stupid one. Many companies have done just this with other tests, using them as rigid filters to rule out applicants scoring below a cutoff point on some supposedly desirable attribute, or above a cutoff on some supposedly undesirable one. Unfortunately, that kind of approach is an enduring temptation to human nature, since it looks like a shortcut to "efficiency." It will be with us throughout our stay on this planet. No tool or instrument that provides a score can be protected from that kind of unimaginative, brutal misuse. The MBTI is, I suspect, a bit less likely to be used this way, because it does not score substantive attributes such as specific job-related knowledge or skills.

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The point [redacted] raises about "group think" is a very interesting one. I believe that I may have misled some readers by my emphasis on the exercise we had at our seminar, where we were split into groups with similar types to perform a small task. This made a tremendous impression on me and I enjoyed it immensely, so I may have made it sound more

important than it was. I certainly didn't mean to imply that our instructor at the seminar was recommending that people of similar type must always work together in segregated groups! In fact, that's just the opposite of the thrust behind all the work of the MBTI's developers. The idea of the MBTI, as I understand it, is to learn about your own type, with its strengths and weaknesses, and to relate that insight to knowledge of other people's types, so that you can work well with all kinds and make the most of any mix you are in. A good manager should be able to use his understanding of all the types in his team in creative and constructive ways. Among those ways might very well be the seeding of task groups with carefully chosen "devil's advocates," just as [redacted] suggests. The MBTI can provide some valuable insights to help the manager choose the right person to stir up a particular group and spark their creativity. Our homogeneous groups at the seminar were just a device to demonstrate the nature of the types to us. Even at that, they were chosen to equate only two of the four type letters (my group were "SJs"), leaving two other dimensions free for wide variation. I think it is quite possible, as I write this, that I enjoyed working in such a homogeneous group because of my own type, which tends to like sameness, safety, structure, and predictability. Others at the seminar in other groups (for instance, "SPs") might have found the experience frustrating and stultifying because they are more likely to enjoy variety, social challenge, and surprises. The MBTI allows us to define and study these differences so that we can appreciate them and use them constructively.



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N-U-M-E-R-O-L-O-G-Y (U)
A Quiz

by [redacted] P16

(FOUO) Here are some numbers graven in the memory bank of every good cryptpie. How many can you recognize?

To: cryptolg at bar1c05

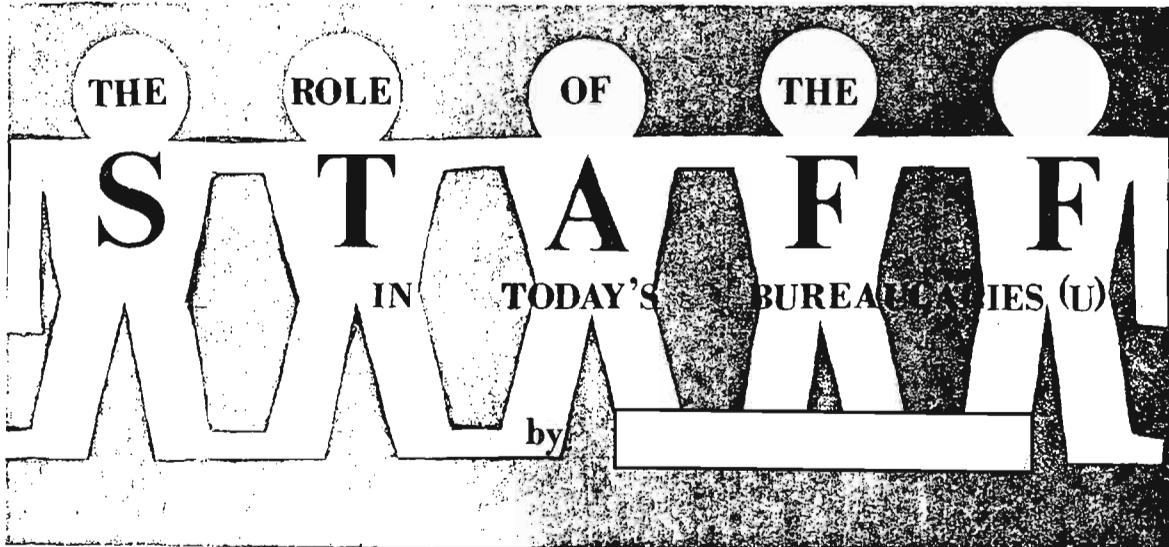
(U) In connection with that poem about the six serving men which you printed in connection with [redacted] article in the January 1984 issue of *Cryptolog*, I thought you might be interested in this sequel which I wrote to that verse:

*I have a seventh serving man
Who taught me quite a lot.
The buddy of those other six
Is simply named "Why Not?"*

(signed) Mudguard Stripling

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- a. 17,576
- b. 101,405,850
- c. 288,000
- d. 5,008
- e. 15,600
- f. 676
- g. 11,881,376
- h. 32,768



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I. INTRODUCTION

The bureaucratic institutions of government are growing larger and more influential with each passing year. This growth is seemingly independent of the political affiliation of the incumbent administration. It has shown resiliency to attacks directed at reducing government size and regulation. In our discussion of the role of the staff in today's bureaucracies, we will not attempt to debate whether growth and influence are desirable. Suffice it to say that if these factors continue to increase, it becomes all the more important to understand how and why bureaucracies function. This paper will deal with one important aspect of the bureaucratic structure, the staff.

II. STAFF FUNCTIONS

(U) The functions of the staff are both essential and diverse. In many instances, the staff is the glue that holds large organizations together. Staffs get involved in a wide range of activities including

- [] coordination and liaison;
- [] information dissemination and filtering; and
- [] decision recommendations.

They will sometimes also serve as a repository for expertise which it might otherwise be impractical to allocate separately to line organizations.

A. Coordination and Liaison: These activities are critical to the smooth operation and interaction of the various departments within the bureaucracy and also to successful interface with outside organizations. The staff will coordinate policy and standards and ensure that the separate activities of two or more departments are directed toward achievement of the overall corporate goals. Disagreements or misunderstandings between departments are often not resolvable in head-to-head confrontations. A staff organization, however, can often act as a sounding board or as an honest broker to resolve differences and get operations back on track.

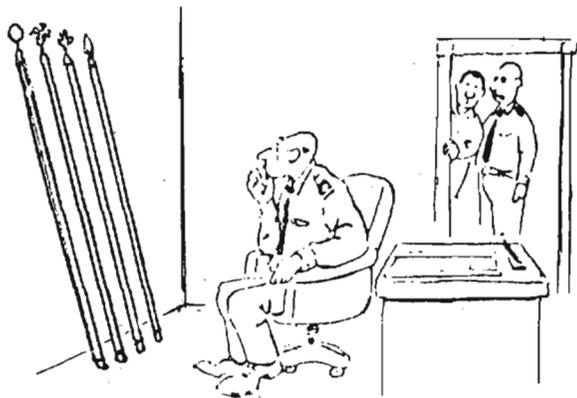
A Staff is many times the ideal focal point for liaison with other organizations outside the bureaucracy. In the Defense Department, for example, the various intelligence agencies must coordinate their activities to achieve the best results with optimum use of resources. In accomplishing this, it is usually the staff organizations serving as focal points in the various agencies that will carry out the liaison functions first. It is there that decisions are made to which agency elements are most likely to contribute. Appropriate internal directives are issued and the tasks are undertaken.

B. Information Dissemination and Filtering: Staffs serve as a point of dissemination for information flowing from the chief executive to the line organizations. When there are policy changes or specific tasks to be assigned, it is often left to the staff to choose the correct distribution or identify specific department that will carry out the tasks.

(U) This information flow also works in the other direction. The executive's staff also filters information passing across his desk. The information generated today in the form of memoranda, reports, special studies, etc., is tremendous. For a chief executive to read all such data would be both time-consuming and impractical. It is the function of the staff then to assimilate the information and pass to the executive only those items deemed to have some impact on or interest to the organization.

C. Decision Recommendations: One of the prime functions of the staff is to make decision recommendations to the executive. In this role the staff gathers the appropriate facts, establishes possible courses of action, and recommends the route or routes deemed most desirable.

D. Repository of Expertise: To more effectively use scarce resources, the staff offers a very good centralized location for personnel with special skills. Where it may be impractical to assign a separate person to each department requiring such skills, assignment to the staff makes the skilled individual available to all departments. An example is in the area of special mathematical or engineering support. Selected departments may not be able to justify the full-time employment of a person with these skills; however, the skills of one such person assigned to a staff could be accessed by all departments as required.



"He's doing a staff study."

(U) All of the above staff activities are important to any organization, be it a one-man enterprise or a large bureaucracy. Often in a small business these functions are not assigned to a separate staff but are accomplished by the owner or manager. In a bureaucracy with wide-ranging interests and responsibilities, it is often more efficient to pool these functions together into an organization (the staff) which can develop high proficiency in these tasks. This practice also releases line organizations to do the essential business with which the particular bureaucracy is charged. As a final note on the functions of staff organizations, the following paragraphs condensed from a University of Utah article provide valuable insight into the ultimate goal of the staff: to present the executive with completed staff recommendations.

"Completed staff work is the study of a problem and the presentation of a solution by a staff employee in such form that all that remains to be done on the part of the executive is to indicate his approval or disapproval of the completed action. The words completed action are emphasized because the more difficult the problem is, the more the tendency is to present the problem to the executive in piecemeal fashion. It is a staff member's duty to work out details, no matter how perplexing they may be. The product, whether it involves new policy or affects an established one, should, when presented to the executive for approval or disapproval, be worked out in the finished form.

"The impulse which often comes to the inexperienced staff member to ask the executive what to do recurs more often when the problem is difficult. It is accompanied by a feeling of mental frustration. It is so easy to ask the executive what to do and it appears so easy for him to answer. The staff member must resist that impulse, but will succumb to it if he does not know his job. The staff must advise the executive what he ought to do, not ask him for guidance. HE NEEDS ANSWERS, NOT QUESTIONS. The staffer must study, write, restudy and rewrite until what has evolved is a single proposed action--the best one of all he has considered. The executive merely approves or disapproves. Alternate courses of action are desirable in many cases and should be so presented. But, the staff should state its recommendation as to which course of action is thought best.

"Writing a memorandum to the executive does not constitute completed staff work,

but writing memoranda for the executive to send to someone else does. Staff views should be placed before him in finished form so that he can make them his views simply by signing his name. The statement should be submitted with supporting documents, as appropriate. If the proper result is reached, the executive will usually recognize it at once. If he wants comment or explanation, he will ask for it.

"The completed staff work theory may result in more work for the staff employee, but it results in more freedom for the executive. This is as it should be. Further, it accomplished two things:

- [] The executive is protected from half-baked ideas, voluminous memoranda and immature oral presentations and
- [] The staff employee who has an idea to sell is enabled more readily to find a market." [1]

III. EVOLUTION OF STAFF STRUCTURES

(U) Staff organizations have been with us practically since the dawn of history. Ever since the first leader attracted a group of followers, staff men were counted on to provide advice, act as messengers, and serve as a buffer between the leader and his flock.

(U) Today's concept of the staff organization in both business and government has evolved out of the complexities of modern, large-scale, cooperative effort. Those businesses without staff functions are adequate only as long as an organization is small enough so that its leaders can give it effective direction and control. For example, in a small organization the chief executive may also serve as the production manager, financial manager, procurement agent, personnel director, etc. With growth, however, the organization faces problems and pressures of increasing difficulty. The need for specialists becomes increasingly important.

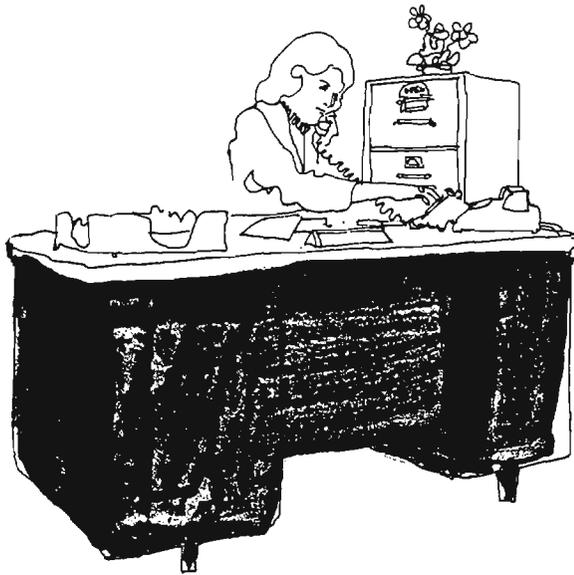
(U) One method of building specialists into the organization is by applying the concepts of staff structure and authority. For example, an executive staff may be created which will allow the executive to divide major responsibilities so that his control over the activities of the organization is direct, yet will permit him to turn over to his subordi-

nates those functions in which he has little interest or lesser abilities. It makes possible the introduction of specialists who extract from the line functions certain difficult tasks and responsibilities requiring highly developed skills and knowledge.

(U) Staffs in business and government are often formed with one or both of two types of individuals: the staff assistant and the staff specialist. The staff assistant's relationship with other organizational elements is often a difficult one. It presents possibilities of ambiguity as to the decision-making authority between the executive and his assistant. This kind of assistant is usually not a specialist in the strict sense, although the appointing executive usually seeks a person with the interests, abilities, special training or experience needed for the performance of functions to be delegated. Such a staff member performs the work subject to the approval and support of his chief, without formal authority to command the actions of others. He does not act independently of his superior, and his work is done "in the name of" that superior. Often this leads to the implication of authority on the part of the assistant that he does not actually have or to the acquisition of authority that the executive never intended to delegate.

(U) The staff specialist is perhaps the more common role of the two. Such specialists work very closely with line organizations and are specifically tasked to support them. Specialists may provide assistance in the areas of finance, personnel, engineering, procurement, etc. Since their supporting roles directly relate to line organizations, there is usually no great area of authority or control to contend with.





IV. LINE AND STAFF RELATIONSHIPS

(U) According to the Dimocks' text on Public Administration, generally speaking "line" connotes action and "staff" advice; "line" is hierarchical, "staff" collateral; "line" is authority, "staff" influence. A bureau chief is a line official, his research assistant is a staff officer. What the correct relationships should be between the two types of activity has long been a matter of debate, to the point where students of the subject have come to believe that the right adjustment between line and staff constitutes one of the difficult areas of management. [2]

(U) Theorists are agreed on the fact that as an organization grows in size and complexity, problems of planning and coordination also grow, not only vertically but horizontally. Operating executives need the help of staff officials to assist in planning objectives, developing programs, and effecting coordination. The main problem is how to organize this relationship.

(U) In studies of the US Department of Agriculture conducted by Gaus and Wolcott, and also by Paul Appleby, it was revealed that this particular department placed substantial power in the hands of staff officials. By necessity, most, if not all, line matters directed to the Secretary of Agriculture had to be cleared through his general staff. There were insufficient hours in the day to permit the Secretary to give adequate attention to all, or even the most important, questions.

(U) Within the general staff, probably the most important positions were those of the four assistants to the Secretary. They occupied his outer office and were closer to him

in daily contacts than most line or other staff personnel. The functions of the assistants were

- [] to reduce the pressure on the Secretary;
- [] to evaluate each matter in the light of all its relationships, departmental functions, and overall policy; and
- [] to determine the merits of each case and pass it on to the Secretary with a recommendation for action.

The four assistants could themselves virtually determine courses of action. Ordinarily they decided who should see the Secretary and what matters did not warrant his attention.

(U) The four assistants had to be generalists in order to be able to translate the narrow, specialized thinking and action into broader terms that helped the Secretary discharge his leadership function within the Department and as a member of the President's Cabinet. In his study of the staff functions, Appleby agreed that the first requirement of a good staff man is breadth of knowledge and ability; he must be a generalist. Also, he must be self-effacing, must like people, and, as a new man in an agency, must be able to assimilate himself into it so as to avoid the jealousy usually accorded an outsider. He must also possess a certain intangible quality that partakes of both integrity and wisdom. A sense of humor also helps. [3]

(U) It all too often occurs that conflict rather than cooperation is the product of line and staff relationships. Line officials resent what they consider interference by the staff in matters of policy and internal administration. A technique that effectively reduces the barrier between line and staff officials is the use of interchangeable tours of duty. Line officials are rotated to staff positions for two or three years and then returned to their line jobs. This exchange, which could occur several times in the career of a key individual, tends to foster understanding of the other fellow's point of view and the problems he faces.

V. STAFF PROS AND CONS

(U) In their contributions to the smooth conduct of organizational management, staff organizations have their supporters and detractors--depending mostly on whom you ask. Executives tend to favor the staff element as an extension of themselves. Line

organizations, on the other hand, tend to treat staffs with some detachment, a necessary but bothersome part of the bureaucratic system. Some of the pros and cons of staff organization are:

A. Pros:

1. The staff provides more freedom for the executive. By using the staff to smooth out and communicate his decisions, he saves time and is able to concentrate on the more critical aspects of management. The staff will also ensure that he is not bothered by mundane aspects and issues which might otherwise cross his desk. They serve to filter out the unnecessary and provide him with the essential items requiring his attention. They are an extension of himself and serve as his finger on the pulse of the organization.

2. The staff eases the coordination process amongst the various departments and ensures that cooperation is being achieved. It also serves as a central point for liaison with outside organizations.

3. The staff serves as the central location for personnel with special skills that can address events companywide or can be allocated to different departments when needed.

B. Cons:

1. Too many layers of coordination frustrate and inhibit the production managers who require full resources and adequate freedom to perform their duties. The additional coordination channel imposed means additional delays in reaching decisions.

2. Some believe that staffers have too much power. Although the staffer may pay lip service to the idea that he has no authority and merely coordinates and gives advice to the line element, in practice it is rare to find a career staffer who does not seek to enhance his power at the expense of other personnel in the line of command. The real power of the staffer can many times be attributed to his proximity to the chief executive. Being close to the executive's ear means a potential for significant influence on decisions and policy.

VI. SUMMARY

(U) In today's bureaucracies and in private enterprise as well, the staff is viewed as a body of individuals who have advisory responsibilities but no command authority. They report directly to top executives and are experts in functional areas. This contrasts with line personnel, who have operational

responsibilities and line authority. They report to top executives through a chain of command and managers supervising many different operations.

(U) Livingston wrote that the creation of a staff does not mean the creation of new functions but rather the collection of services or other special functions under one head so they can be more effectively performed. The staff represents no special interest, but rather the overall interest of the organization.

(U) The growth and appearance of staffs varies widely with the kind of association involved. The staff, as the name implies, is something to lean upon. It gives service of advice or counsel as distinguished from authority to perform. However, the staff has certain rights, especially that of performing its service. Staffs are not only for the top echelons. For its full utilization, the concept of staffing should permeate the whole organization. For staff services to be effective, two things are essential: coordination and infiltration.

(U) As the size and complexity of an organization grow, the importance of staff services increases. The presence and use of staffs does not deny the line officers' competence or authority. It is merely a form of specialization. The staff gives advice, makes recommendations, and may even be able to order its recommendations into effect. But it is not charged with putting them into effect. Generally, the line and staff officers work very closely together, the staff having to do with how, when, or where to do something, the line officers with the actual accomplishment. [4]

Notes

1. "Completed Staff Work," University of Utah (1973).
2. Dimock, Marshall E. and Gladys O., Public Administration (New York: Holt, Rinehart and Winston, 1964), pp. 273-294.
3. Gaus, John M., and Leon O. Wolcott, Public Administration and the United States Department of Agriculture (Chicago: Public Administration Service, 1940), pp. 289-377. Appleby, Paul, "Organizing Around the Head of a Large Federal Department," Public Administration Review, VI, Summer 1946, pp. 205-212.
4. Livingston, Robert T., The Engineering of Organization and Management (New York: McGraw-Hill Book Co., 1949), pp. 67-86.

THE Magdeburg INCIDENT: Russian Intercept and Cryptanalytic Efforts in World War I (U)



by

[Redacted author name]

P.L. 86-36

During World War I, much of the early success at sea enjoyed by the Allied Powers stemmed directly from the Russian recovery of German radiotelegraphic codebooks from the cruiser MAGDEBURG, which had run aground near Oldensholm (now Osmussar) Island in the Baltic on 26 August 1914. The full story of this incident and the resultant actions taken based on it has never been completely told, especially from the Russian point of view. The following account is far from complete, but it should serve at least to put a portion of the Russian view on the record in English for the first time.

The running aground of the MAGDEBURG immediately came to the attention of Captain 1st Rank Adrian Ivanovich Nepenin,[2] chief of the Baltic Fleet's Communications (and Intelligence) Service. Nepenin quickly dispatched Lieutenant Mikhail Vasil'evich Hamilton of the torpedo boat LT. BURAKOV to the MAGDEBURG. Aboard the German cruiser, in the captain's cabin under a pile of shirts, Hamilton discovered a radiotelegraphic "Three-Flag" codebook.[3] Hamilton shielded his find from everyone in the cabin and took it back to Nepenin. The MAGDEBURG's crew, including the captain, were interned in POW camps in far-away Siberia for the duration of the war so that no word of the captured codebook would be revealed.

Later, while Russian divers were examining the submerged portion of the MAGDEBURG, they found the body of a German code clerk in whose hands was clasped a second copy of the codebook. Two photographic copies were made of

(U) Originally prepared as an Appendix to the author's article on "Communications Intelligence and Tsarist Russia," which appeared in the Jan 84 issue of Cryptolog.

the original book and provided to the Baltic and Black Sea Fleet Commands by the Russian Naval General Staff.[4] Shortly thereafter Captain 1st Rank Mikhail Aleksandrovich Kedrov and Captain 2nd Rank Mikhail Ivanovich Smirnov were sent to England with the original copy of the German codebook, which they handed over personally to the First Lord of the Admiralty, Winston Churchill.[5]

Before going into the Russian cryptanalytic efforts involving the German codebook, let's look at the special intercept station set up by the Russians prior to the MAGDEBURG incident.

From the first days of the war Captain Nepenin was concerned about German espionage activity on the territory of Finland (then a part of the Russian Empire) and in the Baltic area where enemy agents could monitor the movements of Russian ships. Although there was strict censorship in the area, discovering enemy agent radio stations operating independently would be a difficult task. Even though counterespionage was not a direct function of the Communications Service operation, Nepenin received permission from the Commander-in-Chief, Baltic Fleet, and the Chief of the Naval General Staff to set up special radio stations to monitor the airwaves for unusual

emissions in order to locate enemy transmitters. Thus, the first special intercept stations were planned with both counterintelligence and positive intelligence-gathering roles in mind.

The location of the first "special-purpose radio intercept station" (RADISTANTsIYa OSOBOGO NAZNACHENIYa, or simply OSNAZ) was at Cape Shpitkhami (now Cape Poosapea/Pyaspea in Estonia) on the far western tip of the southern coast of the Gulf of Finland, some distance inland from the coast.[6] In the middle of a pine forest, land was cleared away for the site. High pine trees hid the construction from both sea and shore. An operations building and another one for living quarters of the assigned personnel were constructed. In the words of one of the Communications Service Officers who worked there:

As always it was comfortable and practical, just like everything that came from Captain Nepenin."[7]

The intercept station personnel were allowed no direct contact with the outside world and a reinforced guard was set up around the station for added protection. The necessary supplies were delivered to the station at specified times by car from Revel. Captain 2nd Rank Przhilenskij was placed in charge of this OSNAZ station, which was given the cover story of a Gendarme station to conceal its real purpose. The information acquired later by the station as a result of the cryptanalysis was given the covername "Agent Network X" (AGENTURA IKS) material to also conceal its real source, and all information was then sent by underground cable to the Southern Region administration of the Communications Service in Revel.[8]

However, before "Agent Network X" material could become a reality, the Russians had to make some sense out of the German codebook. According to the former Baltic Fleet Headquarters historian, Captain 2nd Rank Fedor Yul'evich Dovkont, finding the German codebook on the MAGDEBURG did not mean that the encrypted German communications could be immediately read by the Russians. The German communicators changed their enciphering keys every 24 hours at midnight with a special cipher designated "ALFA-GAMMA" or "GAMMA-ALFA." In addition to the codebook on the MAGDEBURG, there was also found a set of official instructions, maps with quadrants of the Baltic Sea marked off, and other documents, the most essential parts of which were reproduced by the Naval General Staff in classified books

and sent to interested Headquarters of Russian Fleet units.

Before the MAGDEBURG incident, Captain Nepenin had instructed radio stations at Communications Service posts to write down precisely all enemy radio transmissions and to send these notes to Communications Service Headquarters, where they were protected until the day when they could be decrypted. With the enemy cryptographic materials now in hand, the difficult task of sorting out these notes and trying to find the keys was begun. A special section was established under Captain 1st Rank Mikhail Platonovich Davydov. Parallel to Davydov's group, Captain 2nd Rank Ivan Ivanovich Rengarten from Baltic Fleet Headquarters also worked at trying to find the keys.

Rengarten made the first breakthrough after one month's intensive effort in partially decrypting a message from the German cruise AUGSBURG.[9] At the same time that the Davydov group (Communications Service) and Rengarten group (Baltic Fleet HQ) were trying to decrypt the German messages, select groups from several headquarters of Baltic Fleet operational units were also independently involved with this effort. For example, the navigation office at the Headquarters of the Baltic Fleet Cruiser Brigade, Captain 2nd Rank Nikolaj Nikolaevich Kryzhanovskij stated:

"Up until the organization of the 'Black Cabinet' [the Shpitkhami cryptanalytic group; see below], a copy of the codebook was sent to us at the Cruiser Brigade Headquarters and we ourselves worked at decrypting the 'FEK' [cover term used in the Baltic Fleet for the German reencipherment tables]. This was highly secret work, even from other officers, and the cause of much talk. On board the cruiser RURIK we had a very small staff at the wish of the ship's captain. Besides myself, there were an senior flag officer and two others, one of whom had an excellent command of the English, French, and German languages."[11]

Following on these early efforts, it was decided that a more systematic effort at cryptanalysis was needed. Therefore it was decided to concentrate the cryptanalytic effort in the Baltic at the Shpitkhami radio intercept station. For this purpose, six officers who know the German language well and had experience in cipher work were selected. At the head of this operation the Naval General Staff placed a

man named E. Fetterlein from the Ministry of Foreign Affairs cryptanalytic establishment. Since Fetterlein's last name was of German derivation and could bring unwanted publicity from Russian right-wing nationalist newspapers, such as *Novoe Vremya* (New Times), then conducting hysterical "anti-German" campaigns in Russia, it was decided to give him the last name of "Popov" to use until the war ended.[12]

As a further security measure, those persons assigned to the "Black Cabinet," as the Shpitkhami cryptanalytic group was known, were instructed to write their relatives not to send them any letters directly until the end of the war because of their secret work location. All mail was to be sent to them via the Communications Service Headquarters, which would then forward the correspondence to the individuals. The naval officers of the group still hoped that they might bring their wives to live at the site. However, according to one member of the cryptanalytic group, Nepenin's reaction to this suggestion was:

"What? Wives? I don't want any women combing their hair among the pine trees!"[13]

Captain Nepenin, though, not only made an exception to the "No Wife" rule for chief cryptanalyst Fetterlein-Popov but also went so far as to have a special house built at the Shpitkhami site for the couple.[14]

The initial breakthrough in cryptanalysis by Captain Rengarten made the task of the Shpitkhami group a little easier. The main task was still discovering the daily key which served to reencrypt the German code. British Navy Headquarters also worked closely with the Russian Naval Headquarters in this effort. In addition to a copy of the codebook, all material published by the Russians was sent to the British. This effort reached such a degree of success that within an hour of introduction of the new "FEK" into operation by the Germans, the Russian or British side first discovering it would report it immediately to their counterparts in as simple a manner as possible in order not to attract attention to itself from possible German agents.

The German attribute of being systematic played a major role in the successful cryptanalytic effort. The German Navy separated its ships into different groups, each of which had only its own group's codebook. Therefore, the radio messages of two or more groups were

always repeated in each of the recipients' respective codes. Finding the primary and most complete codebook on the MAGDEBURG was especially helpful. There was a sufficient number of already decrypted radio messages in this codebook to assist in decrypting corresponding passages in all the remaining ones.

The German Navy frequently abused its use of radio communications, which provided more material for the Shpitkhami cryptanalytic to use. In addition, with the aid of radio direction finding (RDF) bearings, the quadrant numbers of the Baltic Sea in which German ships were using radiotelegraphic communications were determined. Since the enemy ships frequently sent their position or rendezvous site (quadrant of the Baltic Sea), this allowed the Russians to use the quadrant maps found on the MAGDEBURG to decrypt the corresponding encrypted locations.

Another significant mistake of the Germans was to be excessively systematic in sending daily routine official reports to naval units and even to individual ships by radio. For example, a detailed radio message sent by the Germans in the first hour of each day with the new reencryption key contained about 10% of the information needed to decrypt it. Often within 30 minutes--almost always within 90 minutes--either the Russians or the British had the new key worked out and then passed it on to the other. Even in 1916, when the German Navy introduced a new codebook with new words and phrases, the later edition kept the same alphabetical order as the replaced version, which allowed the Russians to interpolate unknown locations with those already known. The ultimate success of this cryptanalytic operation can be attributed, on the Russian side, to the efforts of Captain Rengarten, Fetterlein-Popov, and the cryptanalysts of Shpitkhami.[15]

FOOTNOTES

1. Except where otherwise noted, information in this article is based on articles by Rear Admiral Boris Petrovich Dudorov in the emigré journal *Morskije Zapiski* (The Naval Records), New York, March and August 1960, *passim*.
2. See "Communications Intelligence and Tsarist Russia" and "Admiral Adrian I. Nepenin: Father of Modern Russian Naval Intelligence" by [redacted] in previous issues of *Cryptolog*.

3. Dudorov, op. cit., March 1960, pp. 51-53, and Pavlovich, N. B. (editor), Flot v Pervoj Mirovoj Vojne (The Navy in World War I), 2 vols, Moscow: Voenizdat, 1964, Vo 1, p. 95. Prior to the war Russian naval intelligence agents has acquired a copy of the German codebook in Berlin, but this particular codebook's use ended with the outbreak of the war. See Dudorov, op. cit., March 1960, p. 49, and Woodward, David, The Russians at Sea, London: William Kimber, 1965, p. 166.
4. According to Yankovich, V., "On the Origins of Radio Intelligence in the Russian Navy," Voенно-Istoricheskiy Zhurnal (Journal of Military History), Moscow, February 1961, p. 116, the French also received a photocopy of the German naval codebook from the Russians. This may have been the result of the Franco-Russian Naval Convention Agreement of 16 July 1912, which was updated in May 1913 to include the exchange of intelligence information between the naval commands of the two countries. See The Military Attache by Alfred Vagts, Princeton: Princeton University Press, 1967, p. 369; Grunwald, Constantin de, Franko-Russkie Soyuzi (Franco-Russian Alliances) [translated from the French], Moscow: International Relations Publishing House, 1968, p. 246; and Rodionov, A., "The Navy and Coalition Warfare," Morskoj Sbornik (Naval Collection), July 1976, p. 22. No such formal agreements existed between the Russian and British Naval Commands.
5. Steblin-Kamenskij, Senior Lieutenant I. I., "Mine Warfare in the Black Sea," La Revue Maritime (Naval Review), Paris, Nov 1932, p. 620. According to another version, the British probably received the second codebook, as Churchill himself (in The World Crisis, Toronto: Macmillan, 1931, p. 254) described receiving a water-damaged copy found on the body of a drowned German sailor. However, in a more recent revelation, three copies of a codebook, designated SKM 145, 151, and 974. were apparently found on the MAGDEBURG and copy SKM 151 was turned over to the British. See Room 40 by Patrick Beesly, London: Hamish Hamilton, 1982, p. 6n.
6. Dudorov, op. cit., March 1960, pp. 64-66; Rengarten, I. I., "On Radio Communications in the Navy," Morskoj Sbornik (Naval Collection), Moscow, Jan-Mar 1920, p. 42; Yankovich, op. cit., p. 116; and Timirev, Rear Admiral Sergej Nikolaevich, Vospominaniya Morskogo Ofitsera (Recollections of a Naval Officer), New York: American Society for Russian Naval History, 1961, pp. 46-47. Timirev says the site was located between Revel (now Tallin) and Baltijskij Port (now Paldiski), but his information was not first-hand, as was Dudorov's and Yankovich's.
7. Warrant Officer Markov, cited in Dudorov, op. cit., March 1960, p. 65.
8. Dudorov, op. cit., March 1960, pp. 54-66 and June 1961, p. 115; Timirev, op. cit., pp. 46-47; Yankovich, op. cit., p. 116; and Beesly, op. cit., p. 181. According to Beesly, "Commander Przyleneki [sic, Przhilenskij?] in December 1916 visited Room 40 in London and left a memo describing all the advantages which cryptanalysis had given the Russian Naval COMINT effort.
9. Dudorov, op. cit., August 1960, pp. 19-20; Chernomor, Volnyj Baltiki: 1914-1915 (Waves of the Baltic: 1914-1915), Riga: Dlya Vas, 1939, p. 142; and Yankovich, op. cit., pp. 115-116.
10. Kryzhanovskij, cited in Dudorov, op. cit., August 1960, pp. 19-20.
11. After the Revolution in 1917 Fetterlein was apparently employed by the British Government Code and Cipher School as a cryptanalyst, a position he was still occupying in World War II. See Seale, Patrick, and Maureen McConville, Philby: The Long Road to Moscow, New York: Simon & Schuster, 1972, pp. 152, 158; and Beesly, op. cit., p. 182. One former employee of the Tsarist Ministry of Foreign Affairs has characterized Fetterlein as a most gifted cryptanalyst. See Korostovetz, Vladimir, Lenin im Hause der Vaeter (Lenin in the House of the Fathers), Berlin: Verlag fuer Kulturpolitik, 1928, pp. 50-51. Also see Timirev, op. cit., pp. 46-7; and Dudorov, op. cit., August 1960, p. 22.
12. Warrant Officer Markov, cited in Dudorov, op. cit., August 1960, p. 22.
13. Dudorov, op. cit., June 1961, p. 118. This is indeed indicative of the way a professional member of the COMINT service was held in high esteem by those Russians "in the know" under the Tsars.
14. Dudorov, op. cit., March and August 1960; Yankovich, op. cit., passim

THE
POSITION
OF

NSA/CSS



IN THE

US GOVERNMENT (U)



by Q4

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This article outlines the relationship of the National Security Agency/Central Security Service and Director/Chief with the rest of the US Government. Many of the source policy documents referenced herein are extremely sensitive and not available to the total cryptologic populace. They have been disseminated as required and appropriate decisions have been implemented by the NSA/CSS system of directives.

niques employed by the committees are hearings and investigations.

(U) There are four committees--the House and Senate Armed Services Committees, as well as the two intelligence committees--responsible for authorizing programs and for establishing funding ceilings. The actual appropriation of funds is done by the House and Senate Appropriations Committees. They define the precise purpose for which the money is to be spent, adjust funding, and prohibit expenditures for certain purposes.

Relationship with CONGRESS



(U) Congressional interaction with NSA takes several forms:

- [] legislation;
- [] oversight;
- [] program and budget authority; and
- [] appropriation of funds.

(U) Other means of oversight include

- [] program evaluations;
- [] studies by congressional support agencies such as the Office of Technology Assessment and the General Accounting Office; and
- [] investigations by individual members.

(U) The DIRNSA and other senior officials occasionally testify in open and closed sessions of congressional committees.

(U) There have been comparatively few legislative acts passed which relate directly to NSA's functions. The major interaction is with the House and Senate committees on intelligence: the House Permanent Select Committee on Intelligence and the Senate Select Committee on Intelligence, established in 1975 and 1977 respectively. Under the provisions of the 1981 Amendment to the National Security Act of 1947, NSA keeps these two committees fully and currently informed, provides advance notice of significant activities, and submits timely reports in problems. The basic oversight tech-



Relationship with the PRESIDENT

(U) Executive Order (EO) 12333 of 4 December 1981, an unclassified document, provides for the intelligence activities of the US. It established the Director of Central

Intelligence (DCI) as the head of the Intelligence Community and authorized him to establish such advisory groups as required. The Intelligence Community is defined in paragraph 3.4.(f) to include NSA. The EO prescribes general duties and responsibilities of "Heads of Executive Departments and Agencies" (including NSA) and "Senior Officials of the Intelligence Community (also including DIRNSA).

(U) Specific responsibilities assigned to the Secretary of Defense by the EO include

- [] "conduct, as the executive agent of the United States Government, signals intelligence and communications security activities";
- [] "provide for the timely transmission of critical intelligence" (a prime function of NSA/CSS but including all sources); and
- [] "direct, operate, control, and provide fiscal management for the National Security Agency."

(U) The EO assigns specific responsibilities to the National Security Agency, including collection, processing, and dissemination of SIGINT in accordance with guidance from the DCI, "executing the responsibilities of the Secretary of Defense as executive agent for the communications security of the United States Government"; and SIGINT security and security of COMSEC material.

~~(C)~~ The COMSEC mission, NSA's (not CSS's) second national mission, is most recently provided for in a presidential directive (PD/NSC-24) of 9 February 1977, Telecommunications Policy. (This PD is currently under updating review. One draft we have seen also includes "automated information systems security" or COMPUSEC.) The Secretary of Defense is designated "the Executive Agent for COMSEC to protect government-derived information which relates to national security." In this capacity the Secretary of Defense has issued a National Communications Security Directive dated 20 June 1979 which, among other things, established the National COMSEC Committee. The Deputy Under Secretary of Defense for Communications, Command, Control, and Intelligence (DUSD(C3I)) chairs the committee. Membership includes representatives of

- [] the Director, National Security Agency (DDC);
- [] the Secretaries of Army, Navy, and Air Force;
- [] the Secretaries of State, Transportation, and Energy;

[] the Attorney General; and

[] the DCI.

The Secretariat is provided by and quartered at NSA. The National COMSEC Directive assigns to DIRNSA the responsibility "for executing the COMSEC responsibilities of the Secretary of Defense" and lists specific details for carrying out this basic responsibility.

Relationship with the NATIONAL SECURITY COUNCIL

(U) The NSC members are the President, Vice President, and Secretaries of State and Defense. Statutory advisors to the NCS are the DCI, Chairman of the JCS, and Assistant to the President.

~~(FOUO)~~ National Security Decision Directive Number 2, "National Security Council Structure," was promulgated by President Reagan of 12 January 1982. Included in the structure is the Senior Interagency Group-Intelligence (SIG-I) to advise and assist the NSC on intelligence matters and policy. Membership includes the DCI (chairman), Assistant to the President for National Security Affairs, Deputy Secretary of Defense, and the Chairman of the Joint Chiefs of Staff (JCS). By SIG-I Directive No. 1 dated 5 August 1982, two Interagency Groups were established, one for Counterintelligence (IG/CI) and the other for Countermeasures (IG/CM). The DDO represents NSA on the IG/CI, with the Chief of G1 as his alternate. ADDC and Chief G1 are the member and alternate, respectively, of the IG/CM.

~~(C)~~ The present NSC Intelligence Directive for SIGINT (NSCID No. 6) was published 17 February 1972, is consistent with EO 12333, and is still in effect. This directive has undergone little change in its several versions since 1952. It reiterates the basic responsibilities from EO 12333 (and its predecessors) of the DCI, Secretary of Defense, and DIRNSA, but specifically for SIGINT. The NSCID says that DIRNSA "shall report to the Secretary of Defense and shall be the principal SIGINT advisor to the Secretary of Defense," the DCI, and the JCS. It also establishes "under the Secretary of Defense and subject to his authority and control a National Security Agency." The Director and Deputy Director shall be designated by the Secretary of Defense, subject to approval by the President. The duration of their appointments shall be at the pleasure of the President. "The Director shall be a commissioned officer of the armed services, on active or reactivated status, and shall enjoy not less than three-star rank during the period of his incumbency. The Director

shall have a Deputy who shall be a career civilian with SIGINT experience."

(c) The NSCID-assigned duty of DIRNSA is "to provide for the SIGINT mission of the United States, to establish an effective unified organization and control of all SIGINT collection and processing activities of the United States and to produce SIGINT in accordance with objectives, requirements and priorities established by" the DCI. The Central Security Service (CSS) was established in 1972 under the DIRNSA. All military elements that perform SIGINT activities are in the US SIGINT System and, in turn, are in the CSS.



Relationship with the
DIRECTOR OF CENTRAL INTELLIGENCE

(FOUO) Under the authority of EO 12333 and NSCIDs, including the SIGINT NSCID, the DCI established a National Foreign Intelligence Board (NFIB) and National Foreign Intelligence Council (NFIC) by DCI Directives (DCIDs) of 28 January 1982, replacing the US Intelligence Board (USIB). These bodies deal with all-source intelligence. The NFIB is the senior Intelligence Community advisory instrumentality on substantive aspects of national intelligence. The NFIC deals with "national intelligence issues, other than substantive"; it advises on priorities and objectives for the National Foreign Intelligence Program (NFIP) budget. The DCI and his deputy are Chairman and Vice Chairman, respectively, of both bodies. Membership on the NFIB and NFIC includes:

- [] DIRNSA;
- [] Executive Director, CIA;
- [] Director, DIA; and
- [] senior representatives of the State, Treasury, and Energy Departments and of the FBI.

(FOUO) Senior representatives of the military intelligence services and of the DoD special reconnaissance programs are members of the NFIC; they are observers on the NFIB except that the latter are "members when programs under their purview are considered." Additional members of the NFIC (but not of the NFIB) are senior representatives of the Secre-

taries of Defense and Commerce, of the Attorney General, and of the Assistant to the president for National Security Affairs.

(S) The DCI SIGINT Committee, which functions under a DCID of 12 May 1982, advises and assists the DCI and the DIRNSA. The Chairman comes from NSA but is a full-time member of the DCI Intelligence Community Staff. The Director of Policy (Q4), NSA, is the NSA member. Other members are representatives of the Intelligence Community principals (see EO 12333 for definition). The Committee meets frequently, at least weekly on the average, and advises on all facets of SIGINT: requirements, priorities, objectives, security, etc. The Chairman also establishes subcommittees or task forces as required.

(S-EO) A DCID of 17 May 1983 sets forth the rules and regulations for SIGINT liaison with and release of SIGINT to foreign governments. The DCI establishes policy and approves procedures, with the advice of DIRNSA. The Director of NSA is executive for conduct of arrangements with the United Kingdom, Canada, Australia, and New Zealand. Except as specifically exempted by the DCI (in favor of DIRNSA),



SIGINT Security Regulations make up another DCID: Volume I, dated June 1982, covers COMINT; Volume II, dated January 1982, covers sensitive-source ELINT. All of these SIGINT DCIDs are products of SIGINT Committee recommendations.

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Relationship with the
DEPARTMENT OF DEFENSE

(e) Computer security is at present only a DoD mission, the most recent, assigned to NSA by DoD Directive 5215.1 of October 1982, though it is expected to develop into a national mission. The DoD Directive established the DoD Computer Security Center. The directive is unclassified and releasable to the public.

(e) Under the provisions of the law (the National Security Act of 1947), EO 12333 (and its predecessors) and the SIGINT NSCID, the Secretary of Defense issued a DoD Directive charter for NSA (DoD Directive S-5100.20, dated 23 December 1971). The DoD charter directive references only the SIGINT NSCID but is consistent with the EO, as is the NSCID. This charter is primarily based on higher

~~SECRET~~

level intelligence documents and is primarily intelligence-oriented (i.e., toward SIGINT) but it does, as does the EO, provide for the COMSEC mission. The charter accurately reflects the provisions of the NSCID. It requires

- [] the DIRNSA/Chief, CSS to "report to the Secretary of Defense";
- [] the Deputy Chief, CSS to be not less than two-star military rank, normally of a different Service than the DIRNSA/Chief, CSS; and
- [] the Service cryptologic organizations and "their subordinate activities which conduct SIGINT to be subordinate to the Chief, CSS" (DIRNSA).

(U) The DoD charter Directive for the Under Secretary of Defense for Research and Engineering (R&E), DoD Directive 5129.1, most recently dated 25 January 1984, requires that he exercise staff supervision on resource management matters over the NSA/CSS. This is handled primarily by courtesy copy of budget correspondence between NSA and the DCI, who develops the National Foreign Intelligence Program (NFIP). The DIRNSA is the program manager of the Combined Cryptologic Program (CCP), which makes up part of the NFIP.

(U) A separate DoD charter Directive for the Deputy Under Secretary of Defense for Policy (DUSD(P)), DoD Directive 5130.2 dated 16 June 1977, requires that he exercise staff supervision on policy matters over the NSA. (DoD Directive 5130.2 is titled and refers to the Director of Policy Review, but that position, by separate action, is currently designated Deputy Under Secretary of Defense for Policy.)

~~(C)~~ Two separate DoD functional Directives have been issued for SIGINT and COMSEC, S-3115.7 in 1973 and C-5200.5 in 1981. The SIGINT Directive references the NSA/CSS charter directive, repeats the responsibility for DIRNSA/Chief, CSS to exercise SIGINT operational control over the SIGINT resources of the US, and sets forth responsibilities for other DoD components: support, budget, requirements, etc.

~~(C)~~ The COMSEC directive promulgates basic DoD COMSEC policy and responsibilities of DoD components. It designates DIRNSA as COMSEC program manager; DUSD(P) as the principal staff assistant to the Secretary of Defense for COMSEC policy; and DUSD(C3I) as Chairman of the National COMSEC Committee, the Secretary of Defense's representative for governmentwide COMSEC activities, and the principal staff assistant to the Secretary of Defense for COMSEC resources.



INFORMATION SECURITY

(U) A discussion of NSA's relationship with the rest of the US Government requires separate treatment of information security.

(U) The NSA/CSS Information Security Program for safeguarding the security of cryptologic information is directed by several issuances of the Executive Branch.

(U) Executive Order 12356, National Security Information, dated 2 April 1982, prescribes the uniform system for classifying, declassifying, and safeguarding national security information within and among the executive departments and organizations of the US Government. Policy direction of EO 12356 is the responsibility of the National Security Council. Implementation and oversight of the program is the responsibility of the Administrator of General Services, who delegates this responsibility to the Director of the Information Security Oversight Office (ISOO). ISOO Implementing Directive No. 1 carries out the provisions of EO 12356, effective 1 August 1982, and

- [] prescribes a uniform information information security system;
- [] establishes a monitoring system to enhance its effectiveness; and
- [] sets forth guidance to governmental agencies on original and derivative classification, downgrading, declassification, and safeguarding of national security information.

(U) The Department of Defense issued DoD Directive 5200.1; The DoD Information Security Program, dated 17 June 1982, and DoD Regulation 5200.1-R, Information Security Program Regulation, dated 1 August 1982.

~~(FOUO)~~ NSA/CSS has issued regulations for internal security and, to the US SIGINT System, USSID 3, "SIGINT Security." In addition, National COMSEC Instructions; security guides for specific projects, activities, and related directives; regulations; and instructions are issued.

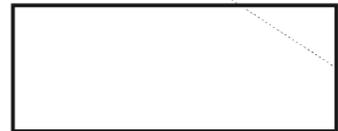
~~(C)~~ NSA/CSS issuances take into account the UKUSA COMINT Agreement of 1946 which includes security policies for the protection and exchange of SIGINT. DCI issues the Signals Intelligence Security Regulations (SISR). A DoD Directive implements the SISR for the SIGINT user community.

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DO YOU KNOW

THE DIFFERENCE BETWEEN A DATA ELEMENT? AND A DATA ITEM! (u)

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*I*n case somebody comes up to you out of the blue and wants to know the difference between "Data Element" and "Data Item," you may need some handy definitions to quote. Accordingly, we thought we'd devote a little space to those two basic terms. As you know, a major goal of data standards is to CONCRETIZE the recording of data so that when you see a standard Data Element you will have an idea of what it will look like in a file.

(U) This involves laying a sharp eye on what you see in a data field. The NAME of a particular field confronting you may not by any means be the same as that of the DATA ELEMENT it contains. It may not even give you a good clue. Here is where data representatives are supposed to earn their pay--namely by

1. digging beneath the surface deep enough to see what the DATA ELEMENT itself is. Having done that, the data rep must then
2. consider what the DATA ITEMS are that constitute that DATA ELEMENT.

Remember, the DATA ITEMS are the things--or the representations of things--that actually appear in a given field of a data file. And each of these units of information MUST by definition belong to some DATA ELEMENT. That is, the DATA ELEMENT names and denotes what these DATA ITEMS pertain to. To pursue this train of thought further, take a look at the following more-or-less official descriptions/explanations of these two basic terms.

DATA ELEMENT: "A unique grouping of related informational units."

Reprinted with slight changes from NDSC Standards Bulletin, #3-84, 22 March 1984.

(U) This is the "official" USSID definition as given in USSID 414, section 2.1, and in NSA Regulation 80-9.

(U) The Department of Defense Dictionary of Military and Associated Terms, put out by the Joint Chiefs of Staff as JCS Pub. 1, is somewhat more specific than the "official" NSA definition. It says:

DATA ELEMENT: "A basic unit of information having a unique meaning and which has subcategories (data items) of distinct units of values. Examples ... are military personnel grade, sex, race, geographical location, and military unit."

(U) The Defense Department definition is "standardized and approved for use by all DoD components," according to JCS Pub. 1. Let me add a footnote to the effect that that the NSA Data Standard Center (NDSC) heartily endorses the spirit of this definition. Several years ago, however, Bob Register and I from the NDSC did join a working group at the National Bureau of Standards' Institute of Computer Sciences and Technology. The aim of the group was to improve the current definitions for the entire range of data standards terms. The members finally arrived at a slightly different version, which has not however officially superseded the USSID definition:

DATA ELEMENT: "A uniquely named and defined category of data having values expressed by the member data items of its data item set."

(U) This definition brought in the concept of "data item set"--that is, the collection of "legal" values which a Data Element could take on. (More on this below.)

(U) As you can see from the above definitions, some key phrases jump out at you:

- [] Category or CLASS of data
- [] Unit of Information
- [] UNIQUE name/definition
- [] Unique DATA ITEM SET (set of values)

(U) The above key phrases are important to understanding what a Data Element is. These ideas tend to be somewhat abstract however. Remember that the other side of the coin, the DATA ITEMS, represent the concrete units of information recorded in a data field. Following are the corresponding (and strikingly similarly worded) definitions of this other key term in data standards terminology.

DATA ITEM: "A subunit of descriptive information or value classified under a Data Element. (Data Items for "Month" are January, February, etc.) [from USSID 414]

DATA ITEM: "A subunit of descriptive information or value classified under a data element. For example, the data element "military personnel grade" contains data items such as sergeant, captain, and colonel." [from JCS Pub. 1.]

(U) The definition that the NBS working group arrived at again emphasized the idea of a UNIQUE data item set:

DATA ITEM: "A unique, defined entity which serves as a member of a data item set and as a particular value of a data element. It may be expressed in a field of a record or a block on a form by a discrete representation configured as an abbreviation, code, name, quantity, or statement."

(U) As we just noted, the latter definition stresses the concept of DATA ITEM SET--which in some cases is finite

and in others open-ended. For example, Callsign, Frequency, and Year are all open-ended, whereas Day of the Week and Month both have finite sets of data items. This view of the DATA ELEMENT/DATA ITEM relationship allows us to posit what we might call "Data Standards Law #1." It states emphatically that Each and every Data Element by definition has its own set of UNIQUE values.

(U) The corollary of this Law is:

No other "data element" can claim the SAME set of data items and still consider itself a separate data element.

By DS Law #1 it really would have to be viewed as the same data element--masquerading under a different name. For example, Transmitter Frequency, Frequency First Observed, and Frequency of Receiver are all the SAME DATA ELEMENT because they theoretically share the same units of information (Data Items), recorded the same way.

(U) To summarize, Data Items are like the various family members of the MacKenzie Clan. Each one is unique, and there is no way you can match them up exactly with the Stewarts or the Buchanans--which are blessed with their own unique members. (In this imperfect analogy we are not considering the possibility of intermarriage.)

(U) We plan to expand further in a later issue on the theme of basic terms associated with Data Standards. In the meantime, don't let anyone tell you that "DATA ELEMENT" and "DATA ITEM" are just alternate names for the same thing. If anyone does so, we will accuse of him of being a follower of Humpty Dumpty in Through the Looking Glass, who proclaimed ex cathedra and ex muro--from his wall--that any word he used would "mean just I choose it to mean--neither more nor less."



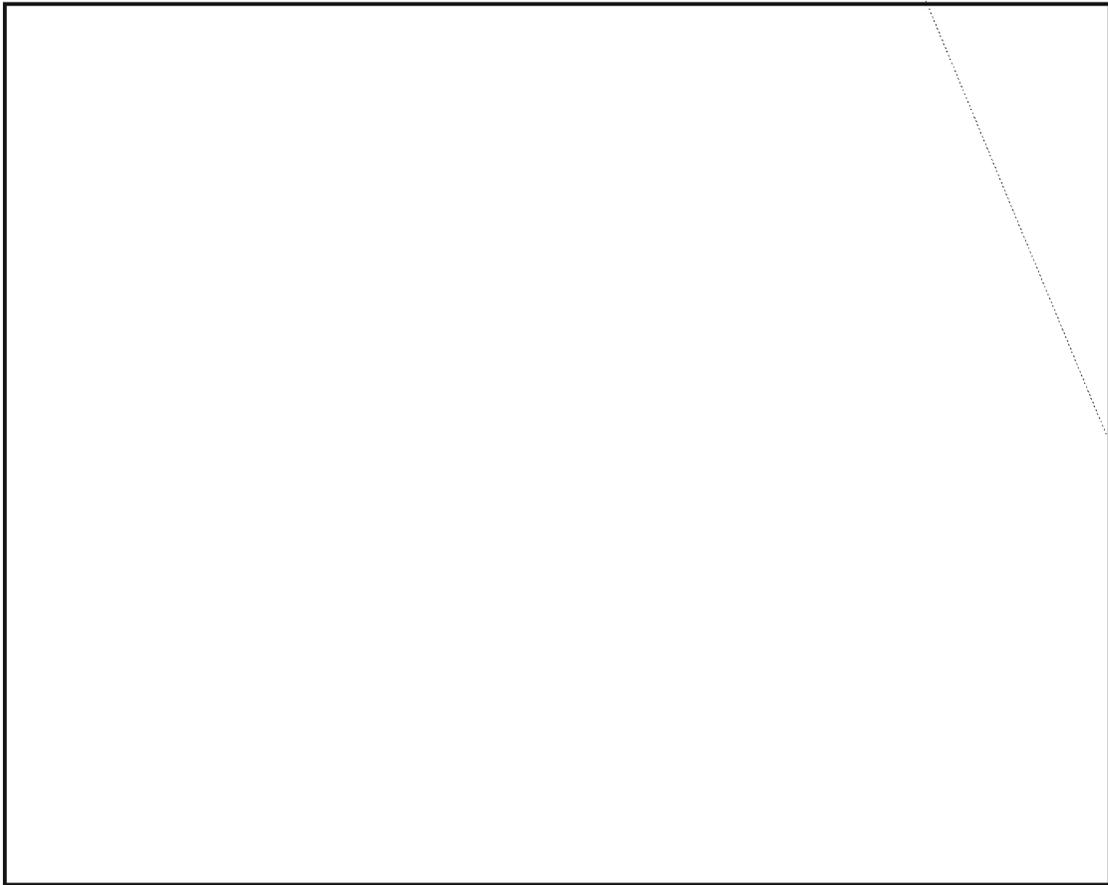
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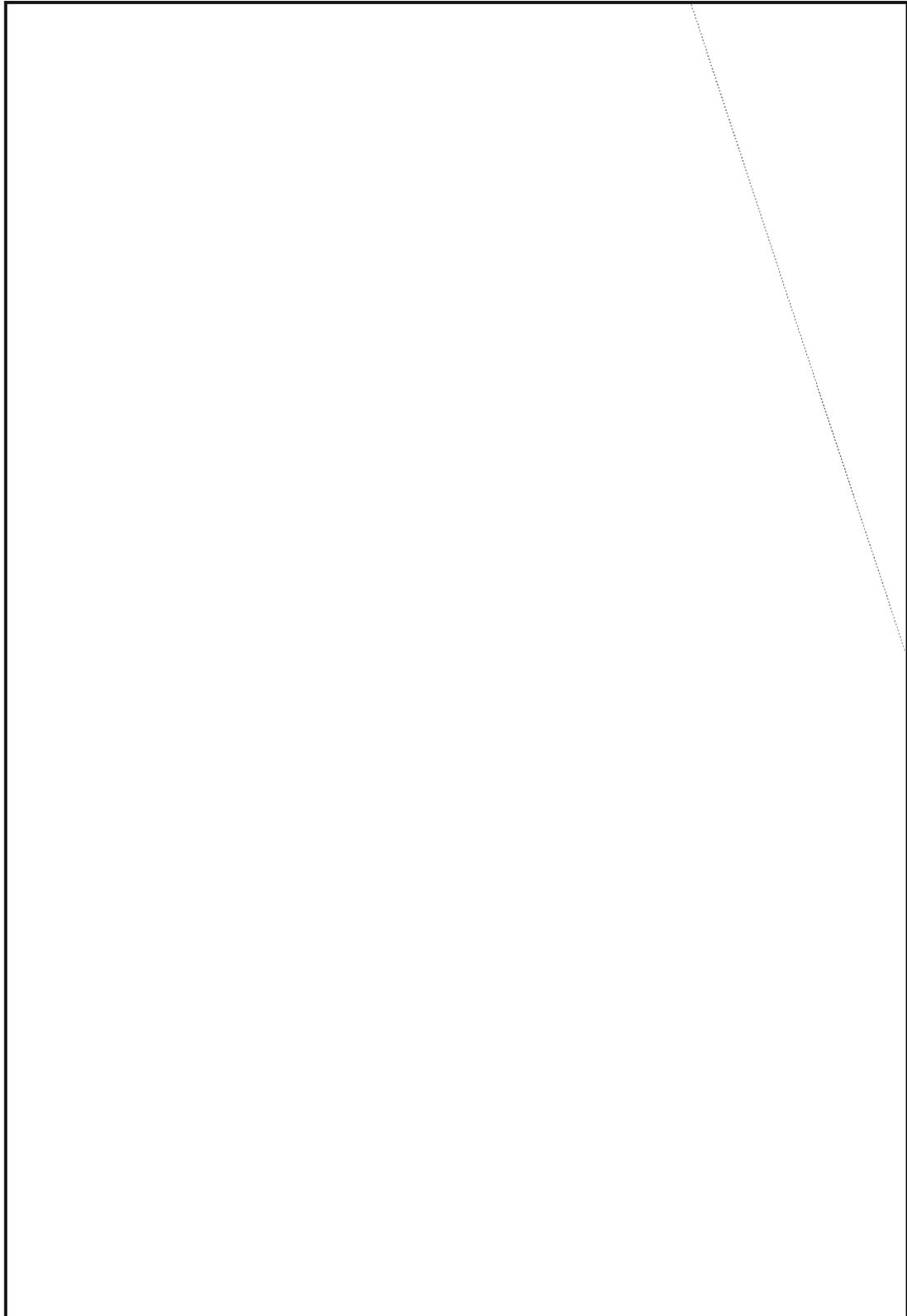
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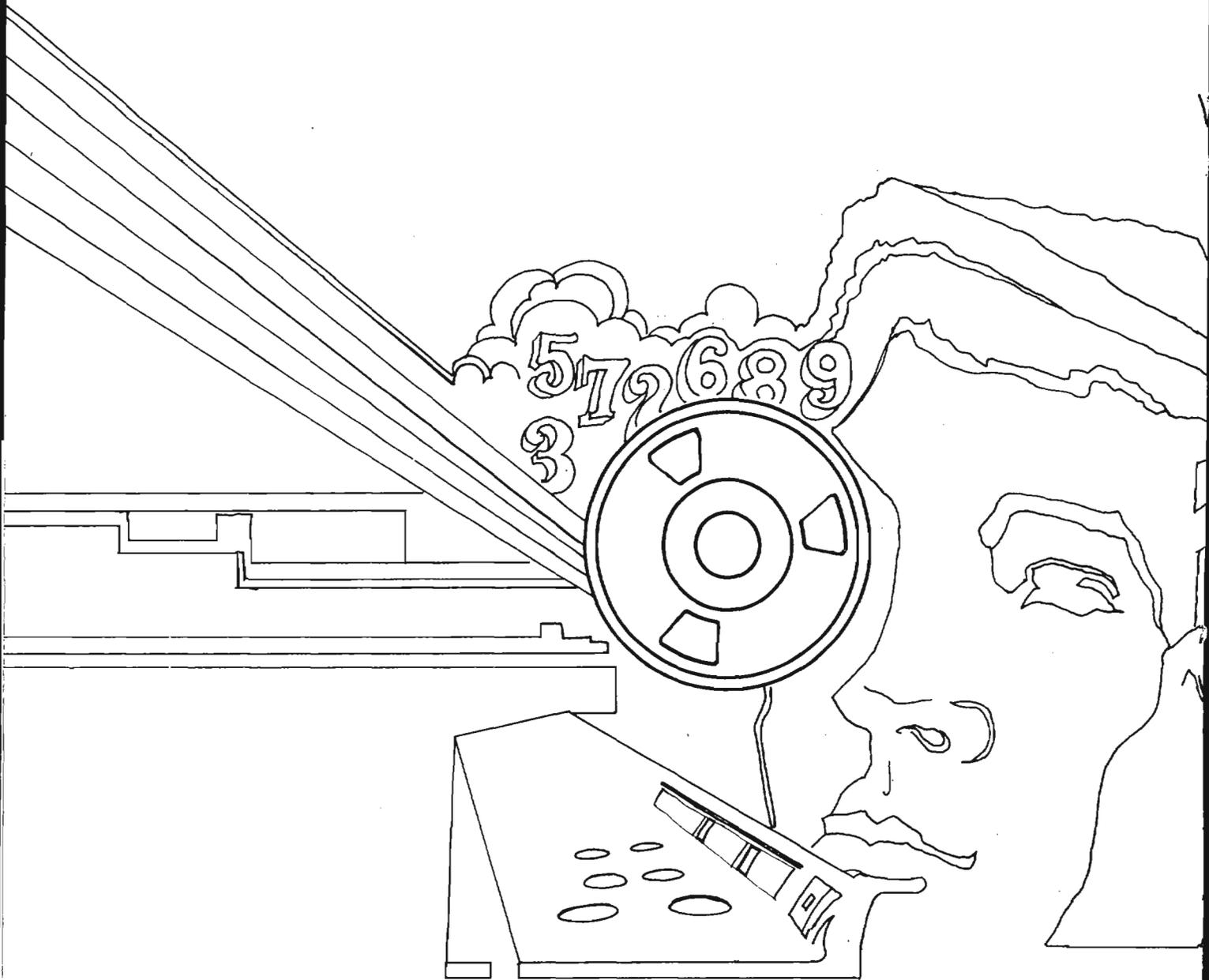
APRIL FOOLS' DAY
VOCABULARY BUILDER

If you don't know Word D
when you begin this puzzle,
you certainly will by the
time you've finished it.

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~~THIS DOCUMENT CONTAINS CODEWORD MATERIAL~~

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