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Nuclear Deterrance — Can it Last?

St. John River Flood Response Study

What is an E.M.O.?

Yugoslav Total Defence

Time for a Checkup?

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CANADA EMERGENCY MEASURES ORGANIZATION

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CAN NUCLEAR DETERRENCE LAST OUT THE CENTURY?

By
*Fred Charles Iklé**

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The autumn of last year marked half the road from the beginning of the nuclear era to the year 2000. Mankind has been spared nuclear devastation since the annihilation of two Japanese cities by the only two nuclear weapons then existing. But the destructiveness of nuclear arsenals, now increased many thousandfold, has sunk into human consciousness like man's knowledge of his mortality.

We all turn away, however, from the thought that nuclear war may be as inescapable as death, and may end our lives and our society within this generation or the next. We plan and work every day for the twenty-first century — as parents educating our children, as young workers saving for retirement, as a nation that seeks to preserve its physical environment, its political traditions, its cultural heritage. For this larger horizon — encompassing for the younger generation simply the common expectation of a healthy life — we do in fact assume "nuclear immortality." We believe, or we act as if we believe, that thanks to a certain international order, the existing arsenals of nuclear weapons with their almost incomprehensible destructiveness will never be used.

Yet, this order is so constructed that it cannot move toward abolition of nuclear weapons. It demands, as the necessary condition for avoiding nuclear war, the very preservation of these arms, always ready to destroy entire nations.

This ever-present danger once caused great anguish among the informed public in Western countries and evoked a diffused anxiety everywhere. Since the mid-1960s, the concern of both the public and the specialists has become far less acute, even though Soviet strategic forces have grown dramatically. Since 1968, confidence has been encouraged by the prospect of agreement in the Strategic Arms Limitation Talks (SALT) and, in May 1972, by the Moscow accords.

These initial agreements are designed, at least from the American perspective, first to preserve mutual deterrence as the strategic relationship between the United States and the Soviet Union, and second, to stabilize it by curbing the build-up of nuclear forces. As seen by a majority of American government officials, congressional leaders and civilian experts, these two objectives should govern our strategic arms-control policy as well as our own force planning for the foreseeable future. Other objectives (such as protecting cities) are held to jeopardize deterrence, and massive arms reductions or general and complete disarmament are considered utopian as well as dangerous.

According to this view, there are no alternatives to our current approach to mutual deterrence that deserve serious consideration. Even though the military services, government agencies and experts may differ on particular points of doctrine and choices of weapons, the dominant view of the workings of mutual deterrence has come to uphold three far-reaching dogmas:

One: our nuclear forces must be designed almost exclusively for "retaliation" in response to a Soviet nuclear attack — particularly an attempt to disarm us through a sudden strike.

Two: our forces must be designed and operated in such a way that this "retaliation" can be swift, inflicted through a single, massive and — above all — prompt strike. What would happen after this strike is of little concern for strategic planning.

Three: the threatened "retaliation" must be the killing of a major fraction of the Soviet population; moreover, the same ability to kill our population must be guaranteed the Soviet government in order to eliminate its main incentive for increasing Soviet forces. Thus, deterrence is "stabilized" by keeping it mutual.

This third dogma dictates not only our desire that Russian cities should remain essentially undefended, but also our willingness to abstain from defending our cities and even to hobble our capability to destroy Soviet nuclear arms. Proponents of this arrangement argue that it will lead to "arms race stability;" critics maintain that guaranteeing capabilities for Mutual Assured Destruction is indeed a "MAD" strategy.

Soviet military writers, by and large, express other views. Above all, they reject the idea that their forces should be designed for retaliation only, stressing instead the need to be prepared for fighting a nuclear war. Among Americans interested in nuclear strategy, how-

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ever, only a minority now oppose any of these dogmas, and fewer still would reject them all. Absence of any one of these three elements — it is widely believed — would undermine deterrence, stimulate an arms race, or both.

Yet, these assumed requirements of stable deterrence are to a large extent the heritage of strategic policies from prior decades, now obsolete. They are a perilous way to protect ourselves from nuclear catastrophe and harmful to the prospects of strategic disarmament. Happily, they are dispensable for deterrence. Over the decades to come, we can develop and put into effect a safer and more humane strategy to prevent nuclear war.

II

It was Winston Churchill who in 1955 first expounded the essential ideas of mutual deterrence to the world at large. In that celebrated "balance of terror" speech, he made a "formidable admission," as he himself called it: "The deterrent does not cover the case of lunatics or dictators in the mood of Hitler when he found himself in his final dugout. This is a blank." The most disturbing defect, today, in the prevalent thinking on nuclear strategy is the cavalier disregard for this blank.

An almost exclusive emphasis on deterrence could be defended as a satisfactory long-term policy if it could be convincingly argued that successful deterrence was tantamount to prevention of nuclear war. There exists no rational basis for such an argument. No matter how cataclysmic the threatened "assured destruction," those calculated decisions which our deterrent seeks to prevent are not the sole processes that could lead to nuclear war. We simply cannot know which of the various potential causes is most probable — whether it be a coherently calculated decision to attack, or an "irrational" decision or technical accident. Yet the approach now prevailing puts almost all effort into preventing the "rational" decision.

Moreover, our current strategy explicitly selects for nearly exclusive emphasis a very special type of intended attack. It has thus become the overriding concern of American strategic analysts and force planners to ensure that our intercontinental arms would be capable of "retaliating" after a Soviet attack sought to destroy them. It so happens that the problem of deterring such an attack lends itself to rigorous analysis, *provided* one postulates that a particular type of rationality governs a Soviet decision whether or not to launch it. The fascinating opportunity for such intellectual rigor — so exceptional in military and political affairs — may partly explain why this problem has commanded so dominant a place in American strategic thinking.

This analysis has now become the canonical way of determining the adequacy of our strategic forces. It uses *our* ideas about how surprise attacks could be designed, our estimates of what weapons the Soviets have and how they would perform, our latest findings about the performance of our own weapons, and, as soon as we discover a mistake in these calculations, our corrections. That is to say, we impute to the Soviet military leadership our imaginativeness (or lack of it) in inventing "successful" attacks, our state of knowledge (or ignorance) of how the weapons on both sides would perform in the vortex of a thermonuclear war and our diligence (or carelessness) in calculations.

The results of such calculations are taken most seriously by American defense planners. Should they suggest a way in which our "retaliatory" capability might be jeopardized, we institute remedies: we harden, disperse or add penetration aids. Should they show that we could still inflict massive destruction, we conclude that all is well. To be sure, we must consider surprise strikes against us based on our understanding of how the relationship between the two strategic forces might be exploited. But we should not disregard all other risks.

Yet this is what the canonical analysis does. It makes a peculiar assumption about the "rationality" of the Soviet decision we need to deter. On the long slope descending from rationality to irrationality, it postulates that only a short stretch needs to be considered. We must prepare — it is argued — for the possibility that Soviet leaders might move so far down this slope as to be tempted to decide on a surprise attack, provided the calculations that we impute to their military staff indicate the attack would "succeed." That is, we prepare for the event that Soviet leaders might judge how a global nuclear war would turn out by relying on such largely untested calculations, trusting their military advisers to have used unbiased estimates and avoided gross mistakes. But we need not prepare for the possibility that Soviet leaders might be somewhat less "rational" and let a cabal of officers mislead them by twisting the enormously complicated data to show that a surprise attack could "succeed" even where our own analysis clearly indicates it would fail.

Or, to put it differently, our analysis implicitly argues that we have to prepare for a certain type of Soviet leader: a man who could be tempted to launch a surprise attack if the calculations we impute to them promise "success;" who would ignore the dangers of long-term radioactive fallout (which our analysis omits) and expect they could stay on top of the postwar chaos (about which our analysis says next to nothing). But we need not prepare — it is argued — for Soviet leaders who might be "less rational" in an acute crisis and who might rely on their ability to launch an attack so designed as to deter us from retaliating. Such a stratagem of "counter-deterrence" would seek to cripple our nuclear forces in a surprise attack while sparing our cities, in order to deter the U.S. President from reprisal against Russian cities lest withheld Soviet forces then devastate American cities.

When leaders of a powerful country are credited with a willingness to gamble on some scheme for nuclear surprise attack — a scheme whose calculations they cannot validate, whose assumptions they cannot test and whose failure would mean the end of their régime or even their country — how rational a decision are we assuming in our posture of deterrence? When the prevailing American view of mutual deterrence postulates that both the Russian nuclear posture and our own must be designed to deter an opponent of such degraded rationality, why stop at this particular degradation in judgment?

The narrowness of our canonical analysis of what it takes to keep deterrence stable can perhaps be traced to the traumatic American experience of the Pearl Harbor attack. By a few easy protective measures we could have denied the Japanese militarists their success in 1941. This lesson we have learned well, and with good reason. We should not permit such a surprise attack to become easy, lest we invite it during some crisis when our antagonist sees himself forced to choose among deadly alternatives.

To make a surprise attack unsuccessful, however, is not necessarily to deter it. By 1945, after all, the Japanese surprise attack had turned into a failure. Shortly before the attack was launched, Emperor Hirohito anticipated such an outcome and asked his military leaders how they envisaged defeating the United States, given its superior industrial might. His question never received an answer.[1] Would hardening, dispersal and a higher alertness of the American forces in 1941 have made the Japanese military abstain, or merely have driven them to redesign their attack?

Pearl Harbor thus provides a lesson beyond that of the danger of forces vulnerable to surprise attack. The Japanese military evidently expected that the United States, if it were disarmed in the Pacific, would not mount the terribly costly effort of striking back. In choosing this gamble, they were even more "irrational" than future Soviet leaders would have to be to gamble on "counter-deterrence," since our striking back after Pearl Harbor did not invite the devastation of American cities. Yet today, our European-based nuclear arms, for instance, are vulnerable to a "counter-deterrence" attack.

Rather recent history reminds us that men can acquire positions of power who are willing to see their nation destroyed in pursuit of causes which only they and their henchmen espouse. In countries that tolerate a dictatorship, a leader might always rise to the top who deems it a virtue, perhaps part of his revolutionary creed, to live dangerously — *vivere pericolosamente*, as Benito Mussolini put it. What a sad irony that the nations that had to fight Hitler to his last bunker should now rely on an interlock of their military postures, making survival depend on the rationality of all future leaders in all major nuclear powers.

[1]Many other examples can be found of aggressive wars that have been planned without at all considering how they were to end. See the author's "Every War Must End." New York: Columbia University Press, 1971.

III

In the 1950s, prior to the missile age and Russia's massive build-up of her nuclear forces, one heard a great deal about the risk of accidental war. Now, when American and Soviet missiles by the thousands are poised in constant readiness, this concern has curiously diminished. To justify this more relaxed attitude, some might point to the fact that no unauthorized detonation has ever occurred, or cite the American-Soviet agreements of 1971 for improving the hotline or recall the elaborate safeguards with which the military seem to protect nuclear weapons.

But nobody can predict that the fatal accident or unauthorized act will never happen. The hazard is too elusive. It is inherent not only in the ineradicable possibility of technical defects, but also in the inevitable vulnerability to human error of all command and operational procedures — during periods of high alert as well as during the many years of quiet waiting. So exceedingly complex are modern weapons systems, both in their internal mechanisms and in their intricate, interactions, that it seems doubtful whether any group of experts could ever ferret out every unintended ramification, discover every lurking danger. Indeed, the very word "system" misleads in that it suggests a clearly bounded combination of parts, their interactions all designed to serve the intended purpose.

The deadly danger is deepened by the fact that latent hazards can only be corrected if they are sought out. To look, day in and day out, for some hidden risk of accident is not a task, however, that captures the attention of top decision-makers. It is far from unusual in military operations for serious oversights or occasional incompetence to go undetected or uncorrected until after a major disaster. For example, after the North Korean seizure in 1968 of the American reconnaissance ship *Pueblo,* when the crew had been unable to destroy all the cryptographic material before capture, destructive incendiary devices were suddenly permitted aboard ship. Previously, such devices had been prohibited because of the fire hazard, and the development of safer ones had been neglected. Safeguards rarely come without costs, and often appear to pose counteracting hazards.

Drastic shortcomings in the Defense Department's worldwide communications came to the attention of a congressional subcommittee after the Israeli attack in 1967 on the American ship *Liberty.* At the beginning of the Six-Day War, the Joint Chiefs of Staff decided to order the *Liberty* into safer waters. Over a period of 13 hours prior to the Israeli attack, they sent their order in at least four messages. Two of the messages were misrouted to the Philippines and one of these was thence sent to the National Security Agency in Maryland, there merely to be filed. Another message was routed over two paths to be doubly sure; in the first path it was lost in a relay station, in the second delayed until many hours after the attack. The fourth message also arrived too late. This failure in emergency communications occurred under almost perfect conditions: no facilities had been disabled, there was no enemy jamming, and no restrictions on the use of available communication modes had been imposed.

It can be argued that safeguards for nuclear arms are likely to be more stringent and more carefully designed than arrangements protecting cryptographic equipment or procedures for transmitting top-level emergency commands. But those Russians and Americans who monitor the safety of strategic arms cannot afford to learn from past accidents to probe for and correct critical hazards. When it comes to defects in safeguards that might lead to an accidental nuclear war, our societies cannot survive by learning through trial and error.

Polaris and Poseidon submarines suffer from communication difficulties so serious that "some of the messages never get delivered," as a senior naval officer put it. To permit "retaliation" after a massive surprise attack, officers on American and Russian missile-carrying submarines must be ready, presumably, to launch their enormously destructive loads even after military communications networks have been destroyed. Yet, they must never inadvertently or deliberately misconstrue an order to launch — during all the long years the submarines will cruise the oceans as part of the "stable" deterrent, as well as during the confusion and turmoil of a global crisis. Will this formidable requirement always be met?

The peril may well be greater on the Soviet side. Since the American military establishment is relatively open to outside scrutiny, pressures to ferret out safety hazards or institute perhaps costly remedies can come from civilians in the executive branch, congressional committees and even the public. Under the compartmentalized, pervasive secrecy of the Soviet military, however, past accidents and present hazards can be kept not only from the public but from senior civilian authorities as well.

Given that occasional incompetence or malfeasance is predictable in large institutions — whether military or civilian — the safety of nuclear armaments remains a constantly pressing uncertainty. Given the huge and far-flung missile forces, ready to be launched from land and sea on both sides, the scope for disaster by accident is immense. Given that our strategic dogmas demand the targeting of populations and denial of defensive measures, the carnage would be without restraint. And as if all this were not terrifying enough, some proponents of these dogmas want to push matters to the brink.

Various influential people have urged that the United States adopt procedures to launch its missile force upon receipt of a warning that a Soviet surprise attack is on the way. Senator Fulbright, for example, recommended in 1969 that our missiles should be launched "immediately" upon warning of a Soviet attack, "without any fiddling around about it, even without asking the computer what to do," even if the warning indicated a "light attack." Other American senators and government advisers have also advocated that, in the event our forces became more vulnerable, we adopt a policy of launching our missiles on warning. According to at least two of these advocates — Jerome Wiesner, President Kennedy's Science Adviser, and Richard Garwin, member of President Nixon's Science Advisory Committee — it might not even be necessary to wait for the first nuclear detonation before launching.

But what might appear as a deliberate attack within the few minutes before the expected impact could have been a false warning; even an actual nuclear explosion could have been accidental. The short time available to execute a "retaliatory" launch-on-warning of our missile forces would not be enough to resolve this uncertainty.

Advocacy of a launch-on-warning policy might be viewed as a passing aberration in a fluid debate, if it were not for institutional pressures among the military that will keep driving in the same direction. Those branches of American and Russian military services that believe they must continue to press the case for land-based missile forces will — because of the increasing vulnerability of these forces — be ever more tempted to stress launch-on-warning as an option. To make this option more acceptable, new warning systems would be acquired; these in turn would strengthen vested interests in favor of this policy.

In Russia, such pressures may be even more compelling, because Soviet strategic thinking continues to consider favorably "preemption," that is, striking at the enemy before he can complete — or even start — his attack. For instance, the 1968 edition of Marshal V. D. Sokolovskii's book on Soviet military strategy refers to surveillance systems for detecting "the adversary's immediate preparations for a nuclear attack" as well as his massive missile launch, making it possible "to bar an aggressor's surprise attack and deliver prompt nuclear strikes against him." As recently as 1971, Defense Minister Grechko stressed the importance of speed for "frustrating an aggressor's surprise blows and successfully carrying out those military tasks, especially by the rocket troops . . . which must be fulfilled in a matter of seconds." In a matter of seconds — through technical accident or human failure — mutual deterrence might thus collapse.

President Nixon, in his last two foreign policy messages, has rejected a launch-on-warning policy. However, should one side give the appearance of adopting it, the other might feel compelled to institute faster launch procedures, creating an "arms race" in reducing safeguards against accidental war. Under mounting pressures from Soviet "hawks," and from some American "doves" as well as "hawks," in both countries responsible people in the center may not keep enough influence to halt this race. The very fact that well-informed and well-intentioned advisers now recommend, in essence, that the balance of terror should rest on hair-triggered doomsday machines offers a chilling reminder that we cannot rely on unswerving rationality among those who might affect critical strategic decisions.

The launch-on-warning aberration is only the most conspicuous outgrowth of the belief that to prevent nuclear war we have but to deter it. Our present strategic policy aggravates the risk of accidental war through many less visible practices as well as by its grand design.

IV

While the current overemphasis on mutual deterrence against a "rational" surprise attack dates from the mid-1960s, the other two dogmas of our nuclear strategy are largely the legacy of earlier periods. This is particularly true of the dogma that "retaliation" must be swift, inflicted in an all-out strike.

The world's first nuclear force — the U.S. Strategic Air Command (SAC) — was established in a period when we did not have to deter nuclear attack, but seriously feared the Red Army might move into Western Europe with its preponderant conventional strength. SAC became the remedy for the weakness perceived in the United States because of our extensive unilateral disarmament following World War II. One cannot appreciate the thinking of American leaders at that time, unless one makes an effort to recall how imminent they judged the likelihood that the Russians would launch an all-out ground attack in Europe.

Accordingly, to fight a war seemed at least as important a mission for SAC as to deter one. And in planning to fight a war, American strategists took account of what they had learned from the bombing raids in World War II. Whereas they had found that urban societies could continue to support a war effort as long as the damage was partial and gradual, it still seemed possible that sudden and extensive destruction would produce a collapse. Thus, the strategy that had not fully succeeded against Hitler because of technological limitations now seemed feasible thanks to the atomic bomb. Our new weapons could administer the "knock-out blow" against Russian's cities — the industrial and political centers — in order to halt the Red Army's advance against Western Europe. Hence, to be an effective war-fighting strategy, atomic bombing had to be a concentrated, quick blow.

As the Russians also began to acquire a nuclear capability, American strategists came to fear attack on European or even American cities, as an act of "retaliation" should SAC carry out the attack that would leave the advancing Red Army without support from the homeland. Thus, the first priority for SAC in the mid-1950s became the destruction of the Soviet nuclear capability before it could be used. This priority provided a second reason for our nuclear strike to be prompt and massive.

Initially, our strategic forces for this disarming strike lacked intercontinental range; they had to be based in North Africa or Europe to reach their targets. Later, we assigned an increasingly large role in this mission to our growing intercontinental arms, which meant they had to be capable of reaching their targets early enough to prevent the launching of most of the Soviet weapons. Thanks to the new solid fuel technology, our U.S.-based missiles could be launched in minutes and Minuteman became our principal land-based missile force. The requirement for speed, stemming from the disarming mission of our forces protecting Western Europe and appropriate perhaps for the 1950s and early 1960s, was thereby transferred to the arms that were to remain a principal element in our intercontinental deterrent for the 1970s and beyond.

After 1963, however, our dominant strategic philosophy shifted from the emphasis on the disarming strike to the principle of "mutual assured destruction." This shift was primarily motivated by our view of the arms race: we feared that our efforts to maintain a capability for a disarming strike would stimulate a continuing build-up of Soviet forces; and conversely, we hoped that our restraint would be reciprocated. Accordingly, we began to deny ourselves the capability to defend against those Soviet forces that could escape our quick, disarming strike in behalf of NATO, and — further undermining this earlier mission of our strategic forces — we began to curtail our capability to hit Soviet forces. In 1971, for example, the Senate referred explicitly to this new arms-control thinking in voting against funds to improve the accuracy of our missiles.

As a result of these developments, our current strategic posture is afflicted by a deep but strangely concealed contradiction. Those of our forces that serve to protect our NATO allies are still largely designed and operated in accordance with the earlier strategy threatening, in response to a major conventional attack, a nuclear first strike that would seek to disarm. But our global deterrence posture now has to meet the opposite requirement: to eschew, and through agreement mutually to preclude, a nuclear disarming capability. Meanwhile, some of our allies have come to regard our nuclear forces based on their soil as the most tangible symbol committing our entire deterrent forces to their defense, so that our former technological reason for overseas basing has been replaced by a political one. In the midst of the incompatibility between our nuclear strategy for NATO and our global deterrence policy, our so-called "tactical" nuclear weapons — also a legacy of a bygone era — introduce yet another anachromism of obsolete posture and technology.

To make the historical evolution still more complex, starting about 1960 the growing Soviet nuclear capability seemed to threaten more than just vengeful destruction of our cities so as to deter NATO's nuclear "knock-out" response to a Red Army advance. Soviet intercontinental missiles began to pose the canonical threat that figures so prominently in our strategic analysis — the massive surprise attack to disarm the United

States. Given that the major portion of our strategic forces had been designed primarily for the prompt disarming strike in response to a Soviet invasion of Europe, they had not been primarily designed to survive a Soviet nuclear attack. For this new mission — "retaliation" in response to the Soviet nuclear strike — our bombers and missiles had to be launched promptly, before they were all destroyed on the ground. Here was the third reason conspiring to keep our strategic thinking riveted to the notion that "retaliation" had to be swift.

V

Clearly distinguishable from the notion that "retaliation" must be a swift, massive strike in any strategy of mutual deterrence is the now equally prevalent dogma that this strike must be designed to kill millions of people. This dogma can also be traced to the technical and conceptual limitations of strategic bombing in World War II. One has to recall the emotions and theories behind Hitler's raids on Coventry and London, and the deliberate bombing of residential areas in Hamburg, Tokyo, Dresden and Hiroshima, to understand how we could have arrived where we are today. After World War II, military experts began to recognize that the immensely greater destructive power of nuclear weapons could compensate for the inaccuracy of aerial bombing, hence permitting destruction of small-sized military targets. But only if these targets were in unpopulated areas could they be destroyed without the killing of civilian populations. A nuclear weapon small enough to avoid vast civilian damage, yet accurate enough to hit most military targets, was not within the technology of the first nuclear decade.

As our strategic planners began to grapple with the role of nuclear weapons, not only was their vision confined by these technological limitations; but their sensitivity to the distinction between combatants and civilians — long cultivated through civilizing centuries — had become dulled by the strategic bombing in World War II. And given that we were then still planning how to fight — not to deter — a nuclear war, the mass killing of noncombatants came to be viewed as a "bonus effect," a useful by-product of the bombing campaign on which we relied to win in the event of World War III. Our "knock-out blow" would paralyze the Red Army not only by demolishing railroad yards, factories and party headquarters, but also by decimating urban populations and thus (perhaps) crushing Russia's "morale."

This history — not reasoned strategic analysis — led us into the habit of thinking that one had to threaten the killing of millions and millions of people in order to deter an "aggressor." None the less, the question of whether or not cities should be the targets of the "retaliatory" strike remained unsettled. In the late 1950s, a few strategists began to make the case that we should avoid hitting Russian cities in our initial strike responding to Soviet aggression. Instead, we should seek to destroy whatever Soviet nuclear weapons had not yet been used as well as other military targets, holding Soviet cities "hostage" to deter attacks on our cities. This strategy, it was then argued, would not only serve us better if nuclear war should break out for whatever reason, but would be just as effective to deter it.

During his first two years in office, Secretary of Defence McNamara came out in support of this new strategy and advocated military efforts consistent with it, such as civil defense and "counterforce" capabilities. Yet, after 1963, he began to promote the concept of "assured destruction." Initially, he perhaps meant to use this concept primarily as a convenient bureaucratic tactic. By pointing out our overwhelming capability for "assured destruction," he had a precise, statistical measurement for arguing against budgetary pressures from the military services, that we had more than enough arms for deterrence.

What began as a budgetary device within the Defense Department, conveniently fitting the need to shift defense dollars from our strategic forces to Vietnam from 1965 on, ended up as one of the dogmas governing our strategic and arms-control policy. We came to view a "retaliatory" threat to kill a major fraction of the Russian population as necessary for deterrence. And we came to believe that forces tailored to this threat were the only alternative to forces that appeared to jeopardize Russia's nuclear deterrent and hence would stimulate an arms race.

As "assured destruction" became the yardstick of nuclear strategy, the underlying calculations adopted a brutally simplifying index of success. It considered only those hostages whose death from the retaliatory strike would be certain and exactly calculable — those killed by the direct blast and heat effects of our weapons. In gauging the excellence of our deterrent — as reflected in statistics presented to Congress — those Russians who would be killed or injured by fires, fallout and famine were excluded. Cognoscenti call this method of calculation the "cookie cutter" — nuclear weapons are assumed to "take out" hostages in a neat circle, like a piece of dough.

Such tasteless jargon helps to conceal the peculiar reasoning that is implicit in the modern approach to deterrence. We impute to the potential aggressor enough rationality or compassion to be reliably deterred by the prospect that calculable millions of his compatriots would meet prompt and certain death from "direct weapons effects;" we somehow do not trust him to be deterred by the prospect of the less easily measured millions who would suffer and die from radiation sickness, untreated injuries or starvation. And while destruction of industry has been mentioned as being part of our "assured destruction," the question whether one could spare people and target only industry has scarcely been raised. Yet, by permitting evacuation, for instance, separation of urban industries and populations might be accomplished.

The Nixon administration properly discontinued flaunting of these gruesome statistics to demonstrate the reliability of our deterrent. None the less, most American strategic experts still use the same calculus.

Our arms-control experts and military planners insulate themselves from the potential implications of their labors by layers of dehumanizing abstractions and bland metaphors. Thus, "assured destruction" fails to indicate what is to be destroyed; but then "assured genocide" would reveal the truth too starkly. The common phrase, "deterring a potential aggressor," conveys a false simplicity about the processes that might lead to a nuclear attack, as if we had to worry only about some ambitious despot who sits calculating whether or not to start a nuclear war. A moral perversity lies hidden behind the standard formula: in the event this "aggressor" attacks, we must "retaliate by knocking out *his* cities." Tomas de Torquemada, who burned 10,000 heretics at the stake, could claim principles more humane than our nuclear strategy; for his tribunals found all his victims guilty of having knowingly committed mortal sin.

The jargon of American strategic analysis works like a narcotic. It dulls our sense of moral outrage about the tragic confrontation of nuclear arsenals, primed and constantly perfected to unleash widespread genocide. It fosters the current smug complacence regarding the soundness and stability of mutual deterrence. It blinds us to the fact that our method for preventing nuclear war rests on a form of warfare universally condemned since the Dark Ages — the mass killing of hostages.

Indeed, our nuclear strategy is supposed to work the better, the larger the number of hostages that would pay with their lives should the strategy fail. This view has become so ingrained that the number of hostages who could be killed through a "second strike" by either superpower is often used as a measure of the "stability" of deterrence. Our very motive behind the recent treaty curbing the deployment of missile defenses is to keep this number reliably high.

In the long run, preserving a mutual threat of genocide may impede the reduction of tension and distrust between the two nuclear superpowers that we all hope for. It is far better, of course, for major powers to maintain peace between them by planning for deterrence instead of for war. But to stabilize deterrence by keeping ready arsenals for instant and unrestrained slaughter of men, women and children is likely to impose a wrenching perspective on the officialdom of both nations. Such a "stabilization" perpetuates an arms-control philosophy that, at its core, is incredibly hostile. How would American-British relations have developed in the nineteenth century if, instead of the Rush-Bagot agreement, we had negotiated the establishment of armaments on each side permanently primed to destroy most cities in the United States and England?

Despite the arcane jargon of modern deterrence theory, ordinary Americans and Russians cannot escape the realization that their generation and their children's generation are destined to remain the chosen target of the nuclear forces on the other side. Toward each other as a people, Americans and Russians harbor practically no feelings of hostility, but by our theories they must indefinitely face each other as the most fearful threat to their future existence.

VI

Mercifully, no inhuman power condemns us to live perpetually in the grim jail of our own ideas. Alternatives can be found, although it may take decades to construct a better order for the prevention of nuclear war and the task will require the work of many minds. This is all the more reason for beginning today.

A good place to begin is to cast out the dogma that to deter nuclear attack, the threatened response must be the mass killing of people. By taking advantage of modern technology, we should be able to escape the evil dilemma that the strategic forces on both sides must either be designed to kill people or else jeopardize the opponent's confidence in his deterrent. The potential accuracy of "smart" bombs and missiles and current choices in weapon effects could enable both sides to avoid the killing of vast millions and yet to inflict assured destruction on military, industrial and transportation assets — the sinews and muscles of the régime initiating war. Combined with this change in concept and techniques of "retaliation," we must design solutions more stable than in the past to the problem of achieving invulnerable deterrent forces. No matter how accurately each side can aim its own weapons, we want to make it physically impossible for most of the strategic arms to be destroyed by sudden attack.

It is premature to judge whether such a change in capabilities and doctrine might eventually make it desirable for us and the Russians to permit active defenses for urban populations while prohibiting them for military assets other than the nuclear deterrent. If such discrimination were to become technically feasible, its desirability would depend not only on American-Soviet relations at that time, but also on the danger of attack, if any, from other nuclear powers.

The second dogma we have to discard is that response to nuclear attack must be the prompt, even instant, launching of nearly the entire nuclear force. By eliminating the need to design our arms for instant launching, we can reduce vulnerability in many new ways. Precisely how to design forces that are far less vulnerable because they are not meant for instant reaction is a task for future research. We may not now see promissing approaches; over all these years we have never made the effort. Arms buried thousands of feet underground come to mind, with provision for reaching the surface — and their targets — weeks or months after attack.

By insisting that our strategic arms be capable of swift launch, we have restricted our engineers to such vulnerable arrangements as aircraft in delicately ready conditions and missiles exposed on or near the surface.

If we can eliminate the vulnerability of our strategic arms to surprise attack, we will have broken the vicious circle: that they must be ready for prompt launching because they are vulnerable, and that they are vulnerable because they must be ready. Furthermore, should the Russians come to agree with us, we could jointly decide to replace the doomsday catapults invented in the 1950s with arms that are incapable of being launched swiftly. If the strategic order could be transformed in this way, the dominant fear of surprise attack which drives our arms competition would loosen its grip. Weapons incapable of quick launching tend to be less suitable for surprise; and against truly invulnerable nuclear armaments, surprise would have lost its purpose.

Neither we nor the Russians will suddenly scuttle all our hair-triggered engines of destruction. By abandoning the dogma of speed, however, both of us can shift intellectual energies and budgetary resources to develop different nuclear armaments. Strategic weapons have a long lifetime; between the initial concept and the scrap heap, up to 25 years may elapse. What we engineer during this decade will have to prevent nuclear war into the next century.

Discarding the dogma of speed would result in another gain, perhaps even more important than reduced vulnerability. It would go a long way to reduce the danger of accidental war. By eliminating the requirement for launching entire missile forces in a matter of minutes, we can get rid of the triggering mechanisms and sensitive command procedures where some obscure malfunction might lead to cataclysm. Time is the best healer of mistakes, whether technical or human. The insistence on speed leaves insufficient time for double-checking; it denies opportunities for correction. If rapidity becomes the overriding concern, independent monitors tend to get pushed aside. Until about 1950, the Atomic Energy Commission shared in the custody of the nuclear weapons deployed by the military. But the notion that these weapons had to be ready for immediate use led President Truman to turn them over to the sole custody of the military.

Although avoiding the killing of hostages, these changes would not make nuclear war less unacceptable as an instrument of policy. Deterrence would remain: the conventional military might of the aggressor nation — its navy, army and air force with their logistics support — would be the first to suffer "assured destruction." Such a prospect would make even less tempting the planning of nuclear war than today's actual or imagined opportunities for a quick strike to deprive the opponent of his nuclear weapons. And the risk of the destruction of cities would still loom in the background.

Could the Soviet leaders be induced to accept such an evolution? We have lately devoted a major effort to teach our dogmas to the Russians — some feel with considerable success. Certain stubborn positions in Soviet strategic thought, however, manifest a less narrow view of deterrence by showing greater concern for dangers of a nuclear war that cannot be deterred, and reflect a longer time-perspective than we have developed. Once freed from our dogmas, we may discover that the distance in strategic views between us and the Russians is less than it appears today.

The greatest obstacles to the necessary reconstruction of our strategic order may well be intellectual and institutional rigidities. We justify our old habits of thinking because we are so competently familiar with the arguments against change. We are disposed to reject suggestions for improvement by demanding a perfect solution at the outset.

Military services cling to the type of weapons to which they have become accustomed, seeking marginal improvements rather than radical innovation. For instance, the United States Navy in the 1950s was at first reluctant to press ahead with the Polaris program, preferring to stress the strategic mission of carrier-based aircraft. Similarly, the Soviet Strategic Rocket Forces and the United States Air Force will probably want to hold on to their land-based missile forces well beyond the 1970s. Much is made about the importance of preserving our "triad" of strategic forces, as if the fact that we happened to acquire bombers, missiles and submarines created some sacred trinity. Means outlive their ends among military organizations, for it is to the means that institutional loyalties and intellectual craftsmanship are devoted.

The scholasticism justifying our current policy is full of contradictions. On the one hand, we brush aside the immorality of threatening to kill millions of hostages, assuming that the threat will deter and that to deter means to prevent nuclear war. On the other hand, we argue that we must be poised to carry out "retaliation" swiftly and thus convey determination for irrational vengeance, since all rational purpose of retaliation would have disappeared when its time had come. We want to maintain a vague threat of using nuclear weapons first to deter massive conventional attack; yet, to stabilize mutual deterrence we must not threaten Soviet nuclear arms nor defend against them . . .

The result of such contradictions is a cancelling out of good intentions. In some years, our arms policy is dominated by our preoccupation with the arms race and the view that we should therefore hobble our forces. In other years, we decide to refurbish our so-called options for attacking Russia's nuclear arms. Left to itself, this pulling and hauling between *yin* and *yang* will not lead the world into a safer era. On the contrary, the bureaucratic struggle may result in the worst compromise among the biases of contending factions. While luck has been with us so far, strategic thinking must and can find a new path into the twenty-first century. ▲

ST. JOHN RIVER FLOOD RESPONSE STUDY

by
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The 1973 St. John River Flood Response

The purpose of this paper is to describe and analyze the observations made in our recent field trip to New Brunswick. The initial purpose of the field trip was to examine: (1) the nature of the problems related to the flooding and (2) the response of the Fredericton community to these problems. In the field, the research objectives were somewhat redefined to include: (1) an examination of the response to the disaster for the St. John River valley (including Fredericton), and (2) an examination of the recent history of Provincial Emergency Measures Organization (EMO) which offers an opportunity for a useful case study of the social change of an organization, both in terms of its structure and its legitimacy.

Much of the focus of our* field work was on Provincial level organizations, especially Provincial EMO. This action was taken because: (1) EMO was central in the response to the flooding, (2) the structure of Provincial Government and the social structure of the province as a whole makes the Provincial level best equipped to deal with general emergencies, and (3) EMO provided a good opportunity to study the change of structure and legitimacy of an emergency-relevant organization.

Historical Sketch of Provincial Emergency Measures Organization

Provincial EMO in New Brunswick has gone through some rather major changes in the past decade. Previous to 1968, it had approximately an 18 member staff. At about this time the nuclear attack orientation of EMO lost legitimacy with legislators and the mass media. While EMO was searching for a viable role, criticism mounted until EMO was finally reduced to one man and all equipment was reallocated to other Provincial departments.

Although it is not exactly clear at this point when it occurred, as a result of a Provincial government commission, a new structure for Provincial-Municipal responsibility sharing was instituted. Under the new arrangement, health, education, justice, and welfare became Provincial responsibilities. As a result, EMO responsibilities no longer were a municipal responsibility; rather they became a Provincial responsibility under the Department of Municipal Affairs.

Between the years 1968-1972, the EMO function was carried in the Department of Municipal Affairs budget and it consisted of one man and a secretary. One other person in the Department of Municipal Affairs was also involved in EMO functions, but on an unofficial part-time basis. During this time there was no separate vote for funds for EMO in the legislature. At this point it was not only without legitimacy, it was also virtually invisible.

By 1972, however, the outlook for EMO was somewhat more favourable. It had redefined its role to include natural disaster planning and also Provincial emergency planning. Also a small flood in 1970 and the F.L.Q. crisis were cited as additional factors which helped underline the need for a Provincial organization specifically designed to plan for and deal with natural disaster and emergency problems. As a result, the Minister of Municipal Affairs became convinced of the need for the types of services that EMO could provide under its new task definition. Early in April, 1972 he began pushing for the expansion of EMO in the legislature. One official commented "but last year when they tried to increase it from 1 to 5 or 6 you should have seen the opposition the people gave. The front page of the paper, in large letters, stated that EMO was not the type of thing we needed and that it was spending money for nothing." Thus while the Minister of Municipal Affairs was convinced of the need for EMO, the legislature and the media were still highly critical of the need for EMO. When it came to a vote in June 1972, the expansion of EMO was approved and was allocated a budget of $103,000 for the 1972-1973 year. Subsequently, it was given an approved budget of approximately $115,000 for the 1973-1974 year. As a result of this, the Provincial EMO was expanded to a staff of one part-time director, one full-time deputy director, one training officer, one planning officer one emergency health officer, and three secretaries. One welfare planning officer is soon to be added also. Thus EMO was expanded in size, with an adequate budget and it had some degree of visibility. At this time, however, it still lacked any great degree of legitimacy with the legislature and the media and it remained virtually unknown to the general public.

Prior to January 1, 1973 there was only one part-time director and one deputy director and two clerical staff. After this time, the additional three full-time offi-

*Former Canada EMO fellowship student Richard Ponting assisted in the field work for this study. He is now on the faculty of the University of Calgary.

cers were added and one secretary was also added. Since the staff was expanded, most of the activities of the organization were of an orientating and exploratory nature. The new staff was sent to the EMO College at Arnprior for orientation and meetings were held with various local emergency planning officers (e.g. with the Royal Canadian Mounted Police and Canadian Forces). As a result, very little in the way of specific, concrete disaster plans were prepared by EMO when the St. John River began flooding.

The Nature of the Problem

On Friday, April 27, 1973, the St. John River was in its normal spring freshet and while being closely watched, there was no cause for alarm. Between Friday night and Saturday night, however, heavy rains in the St. John River Estuary resulted in the worst flood since 1923. A reported 1.90 inches of rain fell at Fort Kent, Maine, which is near the source of the St. John River. In the north central area of the Province, Plaster Rock recorded 3.21 inches of rain. In the central area of the Province, Beechwood reported 3.39 inches of rain. The fact that there was approximately two feet of snow on frozen ground in the northern limits of the St. John River Estuary further increased the volume of water which was running into the river.

As a result, a 100 mile stretch of the St. John River was overflowing its banks. Over 2,500 private homes were flooded and 536 families (1,600 persons) were forced to evacuate their homes in the central part of the Province. Major roads to the east and south of Fredericton and several bridges were knocked out while others were simply under water. In the Maugerville, Sheffield area, 5,000 to 10,000 acres of farmland were inundated and many of the greenhouse crops were destroyed. Approximately 1,000 to 1,200 cattle were rescued and transported to safety on barges. The hydro dams along the St. John River were cut to half their normal output (approximately 600,000 kwh) as head ponds were lowered to minimize their effects on the flooding. The power shortage was alleviated by bringing in power from Quebec, Nova Scotia, and New England.

Only one death has been attributed to the flooding. The major losses will be property damages. An estimated 5.25 million dollars damage to public property has occurred and total damages will be approximately 10.3 million dollars. While less than 20 head of livestock were lost, major losses to crops have resulted from the high water, erosion, and loss of greenhouse plants.

The Nature of the Response

The power company which operates the dams on the St. John River, has recently developed a program to collect information regarding the amount of precipitation falling in the St. John River Estuary and, by computer analysis, determine the effect on the height of the river. Based on their Saturday afternoon readings, they saw cause for serious alarm. This flood forecast system had only been in operation for approximately three weeks and consequently there was little historical data to predict how the river would react. As a result of the preliminary nature of the system it could not predict flood stages; rather it could only make flow forecasts. Thus, while unable to predict when the river would rise, it could roughly predict the level it would reach.

At approximately 4:00 p.m. on Saturday, the power company contacted the federal EMO representative and arranged for a meeting with EMO at 8:00 that evening. It also made news releases at 5:00 p.m. and 7:00 p.m. over the radio to warn the public of the coming flood. At that point, they estimated the highest peak would reach Fredericton on Tuesday, May 1. Actually it came on Sunday.

The federal EMO officer called the Provincial EMO officers and at 8:00 p.m. there was a meeting at the New Brunswick Electric Power Company Building. The federal EMO officer, four Provincial EMO officers, and five representatives of the power company met and the nature and magnitude of the problem was discussed. This meeting was a result of an earlier agreement by which EMO was given reports on expected water levels in the flood season. It was decided that an Emergency Operations Centre (EOC) be set up and the power company offered a large conference room on the top floor of their building as an EOC. Eventually the whole floor was to be utilized.

Emergency Operating Centre

At approximately 8:30 p.m. the meeting was completed and a series of other organizations was contacted. Among them were the Royal Canadian Mounted Police (RCMP), Canadian Forces, CBC radio station and CFNB radio, the Mayor's office, the Provincial Department of Agriculture, and the Provincial Department of Health and Welfare. From here, the EMO officials had a meeting in which they discussed the various task areas and problems which would arise. Since the pre-1968 plans were out-dated, the response to the flooding was of an *ad hoc* nature. The general procedure utilized was, first of all, to establish task areas; secondly, to call in resource people from various organizations; and thirdly, to assign to them the responsibility for the task area when they arrived at the EOC. The task area when they arrived at the EOC. The task areas discussed in this meeting were warning, evacuation, accommodation, feeding, health, and agriculture. The problems generated and organizations selected to respond will be discussed as we focus on each relevant organization.

After this meeting, other relevant organizations were called in and assigned tasks. Communication links were established by various means. Six land line phones were installed and the numbers were released over the radio so that the public could give and request information, report problems, volunteer equipment, and request assistance. A citizen's band club had been organized in January 1973, by a planning engineer of the power company at the request of EMO. As a result is was activated quickly in the early phases. Liaison personnel, equipped with links to their radio nets from the RCMP, city police, Department of Transport, Department of Natural Resources, and Canadian Forces were also present. Through these various land line and radio hook ups, an adequate communications ability was established. All communications were set up in two rooms. As a message came in, an EMO officer sent it to whatever group had been assigned to take care of that particular task by way of a runner. Each of these various groups had an office with liaison personnel on the top floor of the hydro building. Thus all information and task requests came in via the communications room and were directed to the appropriate organization which then activated its field resources to meet the requests. In this way, EMO was able to coordinate and direct all emergency-related tasks to maximize efficiency and minimize duplication. If the various organizations needed assistance they would inform EMO of the problem and EMO would contact the organization able to assist. By 10 o'clock on Saturday evening, all needed resources had been determined and all needed organizations had been contacted. As they arrived at the EOC they were briefed on their tasks and were given instructions as to how to operate within the EOC structure. They were requested to organize themselves to handle their task area and to check with EMO if they had any questions or problems.

Problems

While the EOC managed quite adequately, the EMO officers described various problems which arose in organization and coordination, especially in the early phases. As already mentioned, the EOC was not a preplanned phenomenon. As a result, most people did not know each other nor did they know who was in charge of each task area, especially in the early phases. The operation expanded very quickly, between 10:00 p.m. and 12:00 a.m., and EMO felt they were losing control of their task of coordination. As a result, things tended to get confused from time to time. To counteract this trend, EMO officers continued to check with each organization to ensure that it was preparing for its assigned task and they also continued to attempt to explain the overall structure which they wanted. As a result, EMO managed to establish their legitimacy as coordinators and the various organizations got to know each other. Duplication was eliminated very early in the operation.

The decentralized structure of the EOC was also problematic especially in the early stages. Until task area designations were learned and until the organizations began to turn task requests which were not their responsibility over to EMO for reallocation, duplication occurred. As soon as EMO was able to establish itself as coordinator and "priority maker," the decentralized nature of the EOC became less of a problem. However, it remained somewhat problematic since it was difficult to keep everyone abreast of changes in conditions, needs, and requests. An EMO officer was often forced to make decisions without the consultation of representatives of other organizations. An EMO official stated that he would have preferred a central core group which had liaison personnel with decision making authority from each organization so that everyone would have been abreast of developments and also to ensure the best utilization of available resources. Decisions could then have been relayed to the various decentralized offices in the EOC and the rest of the structure could have been the same. This would have minimized or eliminated the problems they experienced when the EOC was developed.

Once the division of labour which EMO had established was learned and once decisions for task allocations were deferred to EMO, the EOC began to function more smoothly. The deference to EMO for decisions is somewhat of a puzzle if we consider that: (1) EMO was not very legitimate before the flood, and (2) there was no pre-existing plan so that some other group could well have assumed the coordinating role. Many factors seem to have contributed to this eventual outcome. The fact that EMO was involved centrally from the beginning of the community response was important. The fact that EMO contacted the various organizations and requested that they come to the EOC to handle a specified problem helped to create the pattern to look to EMO for direction. The fact that EMO had previously met with the disaster planners of the Canadian Forces and the RCMP and had already legitimated themselves as an emergency coordinating organization also contributed. A less visible factor seems to have been the fact that the Director of Provincial EMO was already seen as being a powerful figure. He had previously been the Minister of Education for the Province and he was currently the Director of Administrative Services in the Provincial Department of Municipal Affairs. Thus his decisions may have been respected not so much because they came from an EMO officer but rather because they came from him.

At any rate, EMO became legitimate in the EOC and in the community very early in the emergency. The Mayor put the city departments "under the umbrella of EMO" and encouraged the public to listen to the EMO. All organizations contacted were satisfied with EMO's performance and the Premier, the leader of the Opposition in the legislature, and the media all publicly praised EMO for its performance. Thus, from rather shaky beginnings EMO emerged with greater legitimacy and visibility than it had enjoyed for some time. By 12:00, the EOC was ready for operation.

Selected Organizations

In an attempt to describe how tasks were completed various organizations will be focused upon to explicate their role in the community response. Subsequent to this, the community response will also be described with reference to the tasks performed. In this manner a more complete picture can be conveyed.

Canadian Forces[1]

As mentioned previously, EMO had prior contact with the Canadian Forces. This was done through the Provincial Warning Officer who was the liaison officer to the Provincial Government for the Atlantic Region of the Canadian Forces. On Friday night, the Federal EMO official contacted him and after a short meeting with Provincial EMO, a request was sent to Ottawa to release troops and equipment from the Canadian Forces Base in Gagetown, New Brunswick (approximately 35 miles southeast of Fredericton on the St. John River). A small liaison cell was set up in the EOC to fill requests from EMO and to procure releases for troops and equipment from Ottawa and/or the Atlantic Region headquarters. This liaison cell would take requests from EMO and then relay them to Camp Gagetown or the training centre over their own communication radios where the normal chain of command and normal operating procedure was used to fill the requests.

In terms of troop strength, approximately 300 troops were released in this emergency: one squadron of field engineers and one company of regular troops. In terms of equipment, the military released one heavy ferry, two power boats to move non-motorized barges on the river, one squadron of helicopters, heavy trucks, and sandbags. An additional squadron of helicopters was put on stand-by but the need never arose to call it up. The Canadian Forces officer stated that there was still a good deal more equipment (both communications and other) available so that their abilities were not taxed to a maximum by the flood. As a result, there never arose a need to establish priorities in the filling of requests from EMO. There were always enough helicopters to fill the requests as they came in. Perhaps the only shortage experienced was in the number of barges available to evacuate cattle to higher ground. This did not cause any losses; it merely meant that cattle evacuation took four to five days. In addition to its role in the evacuation of farm animals, evacuees from the nearby area were housed in Camp Gagetown until they could return to their homes. Canadian Forces troops were also involved in search-and-rescue operations with amphibious aircraft, helicopters, and smaller water craft.

1. The Canadian Army, Air Force, and Navy were reorganized into the Canadian Forces and while they are still operationally distinct, they are under a more central chain of command as a result of the merger.

Royal Canadian Mounted Police

At about 9:00 p.m. Saturday, EMO contacted the RCMP and requested that they send a liaison unit to the EOC to establish a working link between the EOC and the RCMP. The RCMP sent this liaison team to the EOC and proceeded to put its own disaster plan into operation. It called its regular forces and put them on weekend alert but did not activate more regular forces since those on highway patrol could be put on emergency tasks. These forces were freed since large parts of highway regularly patrolled were now under flood waters. About 25 to 30 non-paid, trained auxiliary police came in when contacted and the RCMP also had about 100 of its regular people on land and water. It had three large boats and one truck capable of moving in deep water to augment its cruiser capabilities.

During the emergency response, it kept close radio contact both with the EOC and with the Canadian Forces to ensure that all task and responses were well coordinated. The types of tasks that the RCMP handled were: (1) barricading highways under water to prevent people from getting their cars stalled and thus blocking roads in use by high wheel vehicles; (2) evacuating and warning people about the high water; (3) looting patrols, by boat, in the areas of evacuated homes; and (4) patrolling boat traffic on the river. They estimated they checked about 75 percent of the 500 homes evacuated in the Fredericton area, as well as checking some 75 boats on the water to ensure that they were being utilized in a safe manner to try and prevent water accidents. They were primarily involved in looting patrols and boat checking and only carried out about 25 evacuations.

Provincial Departments of Forestry and Natural Resources

Between the two departments, this organization had about fourteen boats large enough for use on the river in the evacuation stage. The department of Natural Resources used its radio capabilities along with the RCMP and Department of Fisheries to augment the communications abilities of the EOC operation. The Department of Natural Resources personnel were also given the task of building an inventory of volunteers and equipment as it was volunteered and/or located. They were also placed in charge of dispatching this equipment and attempted to increase efficiency by assigning the nearest equipment to the location requesting it.

Ham and Citizen's Band Radio

As previously mentioned, an amateur radio net had been developed to handle emergency problems on EMO's request in January 1973. As a result, the radio communications which it could offer were set up by early Sunday morning. Some 50 amateurs were used on a rotating basis to augment other communications nets as they were needed. They played a major role in supplying the communications on the barges with the cattle evacuation centre at the Burton Bridge. They also acted as relay stations between the cattle rescue centre and the EOC.

Local Radio Stations

Both local radio stations were called by 9:00 p.m. Saturday and were requested to send liaison personnel to the EOC to act as an information link to the general public. From the beginning it was made mandatory that all news releases were to be approved by an EMO official before being used to ensure that they were accurate and factual. One station was normally in 24-hour operation and the other station went to a 24-hour operation from Saturday until Thursday. The stations broadcast the EOC telephone number to the public and relayed to the public any requests for assistance or equipment. The mobile units of one station also patrolled the north side of the river and gave the EOC updates on the changing conditions of the river, especially on Saturday night.

City Departments

The Police Department received a call at about 10:00 p.m. on Saturday and sent a police officer with a portable radio to the EOC to act as a liaison officer. Throughout the emergency, the department was concerned with traffic control, prevention of looting, and restricting use of the only bridge in service between the north and south side of the river in the Fredericton area.

The City Engineers were alerted and proceeded to "water proof" the pumping station for Fredericton which was situated at the water's edge. As a result, the water supply was not interrupted.

The only other city department directly involved was the Fire Department and its task was to pump out the basement of the legislature to try and save documents stored there.

The Local EMO Planners

As stated earlier, the EMO function is a Provincial responsibility and as such the municipality has no EMO organization. Provincial EMO has divided the Province into 11 districts alond county lines. In each of these districts, an employee of the Provincial Department of Municipal Affairs has (among other duties) the role of EMO coordinator. In Fredericton, the Local Coordinator was the election's return officer for York and Sunbury Counties. He did not take a very active role throughout the emergency, perceiving that since Provincial EMO was situated in Fredericton, they would handle the emergency. The local coordinator, having no emergency plans, saw his role as that of acting as a resource person if needed. There seemed to be some uncertainty, furthermore, about what the local coordinator's task responsibilities were, this partly being indicated by the fact that the EMO responsibilities were seen as tacked on to other duties and responsibilities which were attended to during the emergency.

Downstream in the city of St. John, the situation was somewhat different. Provincial EMO contacted the County Coordinator in St. John and he set up an EOC to coordinate that community's response to the flooding. From what little we learned of that operation, it seems that the local coordinator in St. John was quite active in carrying out his responsibilities.

Further research would be necessary to determine if the current linking of EMO responsibilities with other task responsibilities of local area coordinators is a particularly vulnerable point. It may be that a local area coordinator may not take his EMO tasks seriously because he knows that the Provincial EMO will act. It may also be that a local coordinator will neglect his EMO responsibilities because of other tasks, and particularly since emergencies are intermittent, the disaster responsibilities may be laid aside. Perhaps this EMO function is set aside because Provincial EMO is low on legitimacy and in many cases until recently, short on manpower. It may be that the EMO task is not stressed or clearly defined when local encumbents receive there positions. At any rate we had two different patterns of response in our cases, the explanation for which may or may not be indicated in the just stated possibilities.

The Emergency Response

Warning

Warning was inadequate for a number of reasons. First of all, the rain came twice as fast as the weather bureau had predicted. Secondly, while water was already in its normal spring freshet and had caused some flooding in the Maugerville-Sheffield area, there was no cause for alarm since this was an annual occurrence. As often happens, when the people who lived in this area were warned of extensive flooding, they refused to evacuate themselves and did not move their animals to higher ground. Relying on previous experience, they did not think they would be in any greater difficulty than they normally were. Thirdly, since the power company was not able to predict river flood stages, their estimated time of flood impact was very inaccurate and the flooding reached Fredericton several days before expected. Thus while people were warned that major flooding would occur the above problems tended to counteract its effect.

Evacuation

As a result of the above problems, evacuation was generally carried out on a last minute basis. The effects of this were quite serious in the area of cattle evacuation. Since farmers would not move their livestock by truck when advised to do so, a great deal of time and effort was required to move the cattle by barges after the cattle had been trapped on high ground.

As for human evacuees, the local ministerial association had arranged for their shelter in the residence of the University of New Brunswick in Fredericton since the semester was over and they were empty. Accommodations were also made available at Canadian Forces Camp Gagetown. Approximately 280 of the estimated 500 evacuees in the Fredericton area went to accommodations at UNB. The other evacuees stayed largely with friends or relatives.

Search and Rescue

Search and rescue was essentially carried out by the RCMP, Departments of Forestry and Natural Resources, Canadian Forces, and volunteers. While a door-to-door search was conducted, most of the effort was simplified since telephone service remained intact for a long time into the emergency stage and people called in for requests to be rescued. As mentioned earlier, most of the need for rescue was created by short warning and the expectations of the people in the flooded area. Most of the search and rescue, which had begun at dawn, was completed by late afternoon on Sunday. Some people who had stayed the night without heat or power, however, requested to be rescued on Monday. Much of the equipment used in these rescue operations had been procured as a result of an EMO request over the radio early Sunday morning for boats and trucks, etc.

Livestock Evacuation

Two agriculturally related problems were created by the flooding. Large greenhouse crops were grown in the Maugerville-Sheffield area and due to the short warning and incredulity of the farmers, they were not moved in time and were lost. The other problem was the removal of approximately 1,000 to 1,200 cattle which were stranded on high ground. The EOC had anticipated this problem and prepared to act on it at sunrise. The livestock rescue centre was a joint effort of volunteers, Canadian Forces troops, Department of Agriculture, Ham Operators, and the affected farmers. Some problems were experienced in the early stages until the EMO training officer, who was raised in the area, appeared on the scene to reassure the farmers and to initiate a more efficient dispatch of rescue barges. After about 11:00 p.m. on Sunday duplication was eliminated. This operation continued until late Thursday with the loss of only four head of livestock.

Community Order

As mentioned previously, the RCMP took care of most of the traffic patrols in the county as well as a boat patrol on the river to check boat use and to check the evacuated homes to ensure they were not being looted. The city police took responsibility for traffic patrols and security surveillance in the city. No other outside forces were needed and neither force called in extra staff, although they put extra troops on standby. Thus it is apparent that the flood did not create many extra demands for community order organizations.

Recovery

Although the field research team was to leave the area before this stage was reached, a few indications of how this would be handled were available. On Wednesday, as the flood waters receded, the Health Department began inspecting homes to determine if the residents could return to them. Money for a relief fund was being collected by a local bank and a committee would be established later to dispense the funds. Assessment of damages would be done in the public sector by the Federal Department of Public Work, the Provincial Department of Highways, the Federal Department of Agriculture, and the Provincial Department of Agriculture. Private sector damages would be estimated by the Maritime Insurance Adjustments Association.

Under Federal-Provincial relief sharing arrangements, New Brunswick must spend $627,000 before the Federal Government pays anything. For the next million dollars, the cost is shared on a 50-50 basis. The next million is split 75-25. For any further expenses the split of a relief is 90 percent Federal and 10 percent Provincial. Since the EOC was phased out on Friday afternoon, most of the recovery operations were carried out via normal time channels.

Conclusion

In short, it can be said that EMO played a central role in the response to the flood and in the process it greatly increased its visibility and legitimacy. While the EOC experienced some problems in the early stages, it eventually was successful in coordinating a rather effective emergency response. Perhaps the weakest phase of the response was the warning. This problem may well be alleviated in the future as the flood forecasting system gets more basic data on the St. John River Estuary and becomes able to accurately predict not only the flow but also the stages of flood crests.

On June 12th, 1973, an article in the St. John Newspaper, The Telegraph Journal, gave a brief history of the flooding on the St. John River. While it is sketchy in places, it gives some indication of the regularity of the flooding on the river. This is a partial quotation of the article and it can be seen that the St. John has tended to flood about every 20 to 40 years.

Records of flooding on the St. John go back as far as 1696 when, apparently, a late and very high spring freshet caused late planting and crop failures at Jemseg. Little is known of the real magnitude of those early floods, but the instance of a store in Fredericton being swept by ice in the flood of 1768 conjures up a bizarre picture.

In October 1798, so the reports at the time say, not a mill dam was left intact for 30 miles around Fredericton following three days of flooding. The floods also left pasture lands covered with sediment.

Getting closer to the present time, accounts of floods become more frequent and more comprehensive — which is not to say the floods themselves have become more frequent, merely that a greater number of records have survived.

In 1831 (or 1832 — there is some confusion), an ice jam caused water to rise four feet on Queen Street in Fredericton, while in the spring of 1846, Kewsick Island lay for a time under 12 feet of water, with all houses swept away.

In 1851, reports tell of what may have been the first instances of flood warning, with loss of goods stacked on wharves at Fredericton avoided, thanks to a telegraph message sent from Grand Falls.

The period of April 25-May 14, 1887, witnessed one of the most serious floods ever to have occurred in the St. John basin, produced by a combination of ice jams, heavy snow accumulation, and heavy rain on April 19-30 over the upper and middle portions of the basin. This was also complicated by a high spring tide in the Bay of Fundy.

A peak level of 26.82 feet above mean sea level was estimated in newspaper reports at the time . . . four feet of water on Brunswick Street in Fredericton . . . the main railway line upstream of Woodstock was washed out . . . and the Maugerville-Sheffield area was particularly hard hit (as in this year's flooding).

Water rose halfway up many houses. No division was discernible between the waters of the St. John and those of Grand Lake.

On May 13 of the 1887 flood, the 75-foot-long Nerepis Bridge was seen floating past Indiantown.

Loss of livestock during these reports of flooding was high, but only occasionally was there a loss of human life. One occurred this year.

In March 1902, one life was lost when an ice jam on the Nashwaak at Stanley gave way.

In June 1922, newspapers reported flood damage totalling $1-million in the province (mostly on the St. John).

April-May 1923 saw 57 bridges damaged or destroyed, and a total crop loss to market gardens in Maugerville-Sheffield.

In April 1934, at least a million feet of lumber were lost in the Grand Falls and Woodstock areas.

In March 1936, unusually warm weather at spring breakup brought about ice jams all over the basin. The CN railway bridge at Fredericton eventually gave way due to ice piling up against it. An all-time level of 30.7 feet above mean sea level resulted in the Fredericton district, leaving three-quarters of the business district under water.

And so the story of flooding continues, with the flood of April-May 1973, only the latest chapter in a continuing and, possibly, never-ending saga.

The Plan d'Action Plan report says this year's "was a particularly bad one."

"Damage estimates certainly are an all-time record for the basin, but we might contemplate a little on how much this was due to the magnitude of the flood itself and how much to our continued thoughtlessness in siting new developments in areas of flood risk. The location of mobile home courts on an obvious flood plain is a classic example."

"Let there be no doubt, of course," says the report, "that we have just witnessed a very extreme hydrological event, with an estimated probability of occurrence of once in several hundred years. Let us also remember, however, that this low probability gives no absolute guarantee that it won't happen again next year."

WHAT IS AN EMERGENCY MEASURES ORGANIZATION?

by
*A. F. Wigglesworth**

Canada Emergency Measures Regional Director for Nova Scotia

Emergency Measures is not a separate function set apart from the normal responsibilities of government. On the contrary, Emergency Measures operations occur whenever a local government responds to any extraordinary emergency — such as a tornado, forest fire, hurricane, earthquake, flood or other natural disaster; a major explosion or accident, or the release of radioactive materials or toxic chemicals; or an unusual peacetime emergency such as a civil disorder. Emergency Measures operations would also be required should the most massive emergency of all occur — a nuclear attack on Canada.

Extraordinary emergencies are those situations in which a local government must be able to coordinate and direct the operations of many or all of the emergency forces that are available in the community. Existing local government forces form the nucleus of preparedness, around which doctors and hospital staffs, the news media, industry, volunteers and other groups organize. It is the need for COORDINATED emergency operations, involving all governmental and nongovernmental groups with the capacity to help save lives or minimize damage, that distinguishes extraordinary emergencies from the emergencies that local fire and police forces, or hospitals and doctors, deal with every day.

EMO is not a special unit or group of people, standing by to save the day in case of a major disaster. Local police, fire and other forces may need some trained auxiliaries to support the regular force in disaster operations. Some additional trained people may be needed in case of attack emergencies, to monitor radioactive fallout with special instruments, or to serve as fallout shelter managers. But the forces responsible for emergency measures are the normal forces of government, with any trained auxiliaries — plus nongovernment personnel with needed skills, such as doctors.

Emergency Measures has been called, "government acting in a period of extraordinary emergency," but it is more than that. Local government forces do provide the core, but many nongovernmental forces and groups must also be involved, and the operations of all these groups must be coordinated effectively if an emergency occurs.

*The author expresses his appreciation to the U.S. Defense Civil Preparedness Agency for the provision of some of the material used in this presentation.

The Need for Emergency Measures Emergency Readiness

"Emergency readiness" — or disaster preparedness — means that a jurisdiction is prepared to respond promptly to save life and protect property if it is threatened or hit by an emergency of any type, utilizing all available resources. This requires that planning be done and preparedness actions be taken before there is an emergency.

If a hurricane or flood threatens, entire communities may need to be evacuated, and people fed and housed until the danger is over. A massive effort may be needed to strengthen dikes when a river is rising to flood stage. If a tornado or earthquake hits, the damaged area must be searched for injured people, and the injured given first aid and then professional medical attention as promptly as possible; the homeless must be fed and housed. If a plane crashes into a town or an explosion occurs or a large building collapses, there are usually problems of getting fire and medical units into the damaged area, and of keeping curious spectators out.

The same types of emergency operations, but on an even larger scale, would be required if Canada should ever suffer an enemy attack, and there would be the added need to see that the people were sheltered against the radioactive fallout produced by nuclear weapons.

The whole concept of emergency readiness can be summed up by saying that the forces of government — and all others with emergency missions — must be able to "do the right things at the right time," when the chips are down. This includes the ability of key executives to coordinate the operations of police forces, fire forces, ambulances, hospitals, medical personnel, radio and television stations, and all other people and units able to help citizens under conditions of extraordinary emergency.

The Need for Coordination and Direction by Key Executives

At times there have been larger-scale emergencies in which each individual department did its job well, but was unaware of all the problems to be faced — and the instructions issued — by other departments. For example, during a large-scale fire emergency the water department issued a call to the citizens to hold the use of water to an absolute minimum, so that water pressure could be kept up for the fire departments. At the same time, however, fire officials were on television instructing citizens to wet down their roofs with garden hoses.

What was lacking was coordination, the "left hand not knowing what the right hand was doing." Newspaper comments by local officials, after such a disaster, have included statements like this: "What happened is simple to describe. The various departments each went their separate way with no one pulling them together. People have given little thought to the mechanics of disaster response." Or, "The city and county agencies were on different wave lengths. They were all doing their job, but they weren't talking together. There is no excuse for the absence of communications and coordination." Poorly coordinated operations can lead to the loss of lives that might have been saved, or the destruction of property that might have been preserved.

This coordination can only be provided by key personnel, who know what needs to be done and what is being done to meet the emergency, and who are directing all of the forces available. These key people may include the mayor/warden, the chief of police, the fire chief, the health officer or a doctor in charge of medical operations, and the local emergency measures Director/Coordinator.

Should a major emergency threaten or strike, the official in charge or command is the official who is always in charge — the mayor/warden, who is responsible for policy-level decisions. The chief of police, fire chief, and other department heads command the operations of their forces. Hospital and medical personnel, and local news media staffs, perform their emergency functions in cooperation and coordination with the operations of government forces.

Role of the Emergency Measures Director/Coordinator

The role of the emergency measures Director/Coordinator is crucial, but is not that of a "Commander" or director of operating forces. During emergencies, the emergency measures Director/Coordinator acts as principal aide or adviser to the Mayor/Warden. His major responsibility is to assure coordination among the operating departments of government, with nongovernmental groups such as hospitals and medical professionals, and with higher and adjacent governments.

This coordinating role of the emergency measures Director/Coordinator is sometimes misunderstood. Some chiefs of police, fire chiefs, or other department heads — and some Mayors/Wardens have had the impression that the job of the emergency measures Director/Coordinator is in some way to "take over," and direct the operations of government and other forces dealing with an emergency.

Nothing could be farther from the truth. The emergency role of the local emergency measures Director/Coordinator is to assist governments in conducting coordinated operations. And his role in nonemergency periods is to take the lead in the community-wide planning and other preparations needed to assure that the jurisdiction will be able to conduct coordinated operations should an emergency occur.

Outline of Emergency Readiness Requirements

The primary requirements for emergency readiness are outlined below, and discussed in somewhat more detail in the Standards that follow:

1. A control center — or Emergency Operating Centre — where key people can direct and control emergency operations. The mayor, chief of police, fire chief, emergency measures Director/Coordinator, and others at this EOC will have the same information on the emergency situation, and they will be able to coordinate decisions more rapidly by being face-to-face. The "left hand will know what the right hand is doing." The Emergency Operating Center must have means of communicating with all operating forces, with other levels of government, and with the public.
2. Government executives and community leaders must do specific planning before an emergency on which forces will do what, if the community is threatened or hit by various types of emergencies. They must also test and practice these plans in exercises that simulate different kinds of emergencies or disasters, in which these key leaders will be the community's top decision makers.
3. The community's leadership must be ready to give emergency instructions and information to their citizens, through radio or television stations or newspapers. People must be told practical things that they should or shouldn't do when an emergency threatens or has occurred. They need and seek instructions so that they may avoid injury to themselves and their families, and minimize damage to their houses and other property. Don't be misled by the widespread but erroneous idea that people are apt to "panic" in a threatening or dangerous situation. This hardly ever happens. People want to get solid, down-to-earth, and practical advice form their government officials.
4. Training is usually necessary to increase the emergency capabilities of both governmental and supporting nongovernmental personnel. In addition, certain hardware (facilities or equipment) may need to be secured or developed, to put the jurisdiction in position to respond effectively if an emergency strikes.

Day-to-Day Benefits from Developing Emergency Readiness

Many benefits to the day-to-day operations of government result from the development of emergency capabilities. These benefits are a bonus, over and above increased readiness to deal with a major peacetime or attack emergency.

A number of city managers and mayors have reported that the interdepartmental planning and exercising needed for emergency readiness also results in improved interdepartmental coordination in the conduct of day-to-day business. Emergency planning requires a cooperative effort on a team basis, and simulated disaster exercises bring key people together to deal with unusual problems and demands, also on a team, coordinated basis.

In carrying out their daily work and programs — maintaining law and order, building and operating street or water systems, fighting fires — heads of departments and their staffs have relatively little occasion to work closely together on common problems. Thus, the departments tend to go their own way, under the pressure of their daily problems, and may fail to develop the relationships with other departments that are helpful in many aspects of the day-to-day business of government.

The team effort essential for emergency planning and preparedness is often the only area in which close interdepartmental cooperation and work is required, and this cooperative effort has a carryover into day-to-day work. While it is an intangible, the inter departmental relationships developed by emergency planning and readiness work are of real value, in the judgment of many city managers and mayors.

Many other, more tangible, benefits also accrue to governments as a result of developing capabilities and readiness for emergencies. For example, developing emergency communications nets and capabilities often suggests ways to improve day-to-day communications systems. Preparations for emergencies can include developing communications and procedures needed for improved ambulance dispatching, or establishing a "911" telephone-number system for use in lesser as well as major emergencies.

The local Emergency Operating Center often can (and where possible should) be used for day-to-day functions, such as dispatching police or fire forces.

Actions to increase emergency measures can also include securing additional firefighting apparatus, rescue vehicles, or ambulance. If a group of auxiliary police personnel is trained by the local law enforcement agency, they may be used to assist and support the regular police force in controlling traffic at events attracting large numbers of people.

Developing emergency capabilities can thus result in many tangible and intangible benefits to the day-to-day operations of government, as well as paying off in lives saved and property preserved should an emergency strike.

Emergency Measures Directors/Coordinators, as disaster specialists, can help in many of the areas noted above, working closely with department heads and the Mayor/Warden.

Role of the Mayor/Warden

The Standards that follow outline the things jurisdictions should do to develop the emergency measures their citizens, need, and discuss in more detail the role of the emergency measures Director/Coordinator. This individual works for and on behalf of the Mayor/Warden, in developing emergency readiness.

It is essential to have the services of a competent, professional, well-trained emergency measures Director/Coordinator, but the best person in the world will be unable to make substantial progress without the active support of the Mayor/Warden, and of the local legislative body. This is because there can be little real readiness unless the operating departments of government participate actively in emergency planning and preparedness, and without the support of the Mayor/Warden, this participation is not often forthcoming. ▲

YUGOSLAV TOTAL NATIONAL DEFENCE

by
*A. Ross Johnson**

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Yugoslavia conducted the 'Freedom-71' manoeuvres in October 1971 — the first large-scale military manoeuvres held there since 1953. 'Freedom-71' (observed by French Defence Minister Debré and foreign military attachés) simulated a thrust from the north-east by a powerful, highly mobile 'enemy' into the hilly region south-west of Zagreb. The defending forces' regular units slowed down the advance of the 'enemy's' tanks, amphibious carriers and helicopter-borne troops and then withdrew to avoid a disastrous frontal battle. As the 'enemy' pushed farther into the interior, however, they were resisted by a combination of regular, territorial and irregular forces of the defender which, attacking from the flanks and the rear as well as the front, reversed the attack after the 'enemy' has advanced 30 kilometres in two days. The political authorities operated under simulated wartime conditions, directing total local resistance from secret locations. The 'enemy's' efforts to control occupied territory were frustrated.

A year later, Yugoslavia organized another large-scale manoeuvre, "Podgora-72'. Again, territorial and irregular forces joined regular personnel, this time to simulate successful resistance against an amphibious and airborne assault on the Adriatic coastline.

Yugoslav Doctrine

'Freedom-71', 'Podgora-72' and a score of smaller exercises demonstrate the progress made by Yugoslavia since 1968 in organizing for defence following the principle of total national defence (*opstenarodna odbrana*). The distinctiveness of the approach is apparent if current Yugoslav defence preparations are compared with those of the early 1950s. Then, fearing a Soviet invasion, Yugoslavia carried out a massive conventional military build-up of almost a half-million men under arms, with a corresponding mobilization capacity. At its peak in 1952, 22 per cent of national income was devoted to defence. Yugoslavia received American military assistance of three-fourths of a billion dollars in the 1950s. But the improvement of Soviet-Yugoslav relations after 1955 resulted in a gradual de-emphasis of defence in Yugoslavia so that by 1968 less than 6 per cent of national income went into defence expenditures and the Yugoslav People's Army (YPA) had been reduced to nearly 200,000 men.

After August 1968, Yugoslavia's leaders found this defence capability quite inadequate. The invasion of Czechoslovakia by the Warsaw Pact countries (Rumania abstaining) was viewed in Belgrade as evidence of a Soviet determination to subjugate wherever possible independent Communist states and, consequently, as an 'indirect attack' on Yugoslavia. Moreover, the Tito leadership clearly appreciated that the build-up of Soviet military power in the Mediterranean now made Yugoslavia of greater geostrategic importance to the power conflct in the Balkans. Determined to defend its position as an independent, non-aligned Communist state 'with all available means, Yugoslavia sought to make this threat credible, and hence deter Soviet political pressure or invasion, by increasing her defensive capabilities.

A renewed massive conventional military build-up was out of the question. Current economic difficulties imposed an upper limit of 6 per cent on the share of the regular military in national income. The unavailability (and political undesirability) of outside assistance and the decentralized political system of the late 1960s — which meant that federal Yugoslavia's constituent republics opposed excessive concentration of power in Belgrade — also precluded the revival of a large-scale standing army. Even had Yugoslavia been able, both economically and politically, to afford a large conventional force, Yugoslav military planners argued that this would be inadequate to meet the threat of a highly mobile great-power military establishment in the 1970s. This was true because, in terms of conventional military strength, Yugoslavia would always be outmanned and outgunned and the new threat posed by a highly mobile enemy required an effective mobilization capability of hours, not weeks. On the other hand, the planners argued, a modern conventional army is inadequately equipped for the controlling of territory. Accepting these arguments from the planners, Yugoslavia's political leadership turned to the concept of total national defence and (the most important institutional ramification of the doctrine) accepted a proposal publicly aired earlier in Croatia for the organization in peacetime of a large-scale territorial defence force (TDF) — in effect, territorial armies of citizen-soldiers organized by the political authorities in the various republics.

The new doctrine, and the military organization and tactics designed to implement it, are still being worked out by the Yugoslav political and military authorities.

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Nevertheless, the major features of Yugoslavia's new approach to defence are already clear. Total national defence rests on the premise that small and medium-size states must be self-reliant in defence if they are to maintain their sovereignty and can, if they have the national will and appropriate institutions involving the entire citizenry in national defence, successfully resist — and thus quite likely deter — external attack. This philosophy underlies amendment 39 of the 1963 Yugoslav Constitution expressly forbidding military capitulation of surrender of territory under any circumstances. The prohibition is restated in the revised National Defence Law of 1969, which provides, further, that it is the right and duty of every citizen to participate in national defence and the right and duty of the local political authorities 'to organize total national defence and to command the battle directly'.

In theory a Gaullist-like *défense à tous azimuths,* total national defence has in practice been adopted by Yugoslavia in order to deter or, if necessary, resist an attack from the East. As described by Yugoslav military writers, this might take the form of an attack by a neighbouring country (e.g. Bulgaria) supported only indirectly by the Soviet Union. In this scenario, the YPA itself would engage the enemy in frontal warfare and drive it from the country. The TDF in the affected border region would selectively assist the YPA; elsewhere, the TDF would remain on alert in case of an increase in the military threat.

Far more likely, according to Yugoslav military writers, is a massive *blitz* attack led by the Soviet Union. In this case, the enemy would enjoy overwhelming military superiority in traditional terms. He could be expected to achieve general air superiority; to mount a massive armoured land invasion, and to attempt to quickly seize Belgrade, Zagreb and other key cities with parachute and helicopter-borne troops. In this scenario, the first task of the YPA, employing frontal tactics but avoiding heavy casualties, would be to delay enemy penetration sufficiently (a matter of hours) for the country to carry out total mobilization. YPA units, withdrawing from border areas, would wage active defence in depth alongside the TDF. The expected consequence would be a merging of front and rear, the transformation of the entire country into a 'hedgehog'. Having turned a *blitz* invasion into a protracted conflict, YPA and TDF units would fight on, using a mixture of combined and partisan tactics. On 'occupied' territory, both urban and rural, TDF and para-military forces would fight a guerrilla war. Only if an entire region of the country were occupied, however, would YPA and TDF units revert exclusively to partisan tactics, as in World War II. By following such a strategy, Yugoslav military writers argue that an occupying force in excess of 8.5 soldiers per square kilometre, or two million men, would be required to completely subjugate the country. Given the Central European balance-of-power, the Yugoslavs assume the enemy is most unlikely to deploy such a force in South-Eastern Europe.

The Territorial Defence Force

The national defence law of 1969 gave legal sanction to territorial defence units created *ad hoc* in the autumn of 1968. Legally and doctrinally (if not *de facto*) co-equal to the YPA, the TDF has since then expanded to a force of 600,000, plus 300,000 members of youth units. The TDF is to expand to three million (15 per cent of the total population) in the next few years. It is financed at the local (*opstina*) and republican levels by allocations from the respective assembly budget and enterprise funds. The current five-year projection postulates raising one half to 1 per cent of national income for defence (in addition to the nearly 6 per cent of national income devoted to the YPA budget) through these sub-federal channels.

In building up the TDF, the main emphasis has been on company-sized units at the commune level, organized by some 500 urban and rural communal authorities according to standards drawn up at the republican and, more loosely, the federal level. These TDF companies are intended for defence within the boundaries of the commune. Many of the units are entrusted with primary responsibility for initial defence against airborne assault. In addition, 'defence units' have been organized on a production basis in some 2,000 large factories and other economic enterprises (each of which is required, by law, to draw up peace-time and war-time plans for local defence). Factory defence units have the responsibility for performing some civil defence functions, defending the plant in the event of direct assault by airborne or other enemy troops, and merging with the communal TDF if the factory is captured. Yugoslavia's constituent republics have also formed some larger (battalion-sized) highly mobile TDF units capable of combat throughout each republic; the desirability of forming more larger units of this type was suggested by Tito at the conclusion of 'Freedom-71'.

TDF units are placed under newly established defence commands, staffed by reserve YPA officers, at the communal and republican level, respectively. While precise data are lacking, the total of full-time headquarters personnel throughout the country may be estimated at 3,000 — the TDF's only permanent cadre. The communal commander is responsible both to the communal political authorities and to the higher, republican territorial defence command. The republican commands have considerable autonomy; but ultimately they are subordinated to the federal Supreme Command. Consequently, the TDF is not part of the State Secretariat for National Defence-YPA chain-of-command; local TDF units fall under YPA tactical command only when engaged in joint operations with YPA units. On occupied territory, the TDF units remain under the republican defence commands. If an entire Yugoslav republic should be overrun by the enemy, the republican defence command would assume control of all military units in its territory — YPA as well as TDF units. Reverting in part to their World War II experience, the Yugoslavs have constructed a command-and-control mechanism intended to ensure that large-scale military resistance will continue even if the top of the military command structure is destroyed.

Training for total national defence is carried out in communal training centres, where reserve YPA officers (who are not 'full-time' TDF personnel) instruct TDF units; active officers instruct the local command staff. Regular training activities are supplemented by full-dress manoeuvres; at present TDF personnel spend about 100 hours yearly in training.

TDF units are armed primarily with locally produced light anti-tank and anti-personnel weapons, supplemented by heavier mobile anti-tank and anti-aircraft weapons for battalion-size TDF units. Yugoslav military writers stress the value of sophisticated weaponry for the TDF (including infra-red and laser-targeting devices, sensors, communications), for they expect the enemy to be prepared for 'counter-insurgency'. Until the TDF can be well supplied with modern weapons, however, the utility of even obsolete weapons captured in World War II is emphasized. Weapons are at present stored in mobilization centres, while personal equipment is kept at home. Dispersal of light weapons on the Swiss pattern has been discussed but not carried out. Based on the experience of recent manoeuvres, the Yugoslavs claim that half the existing TDF can be mobilized in 3-6 hours; the other half (except for Yugoslavs working abroad), in a day or two.

Civil Defence

The post-1968 attention to territorial defence in Yugoslavia has resulted in a de-emphasis of civil defence as conceived in the early 1960s. Large-scale evacuation of cities is no longer envisaged. According to the new doctrine, since half the Yugoslav population now live in towns and cities, they too must be defended no less than the countryside. Furthermore, the TDF has taken over certain activities, such as intelligence and warning, which formerly were the responsibility of the civil defence organization. On the other hand, the doctrine of total national defence envisages an important role for civil defence forces, incorporating, in one form or another, the entire able-bodied population not included in the YPA or TDF. At present the civil defence organization numbers 1.3 million. The national defence law of 1969 stipulates that each commune must form a civil defence organization, subordinate to the communal defence command. The civil defence organization is subdivided into engineering, sanitation, radiation-chemical-biological-defence, fire-fighting, veterinary, evacuation and security units. The primary functions of the civil defence organization in the new system are fire-fighting, public health, shelter, and limited evacuation of the wounded children and the aged.

The Role of the Armed Forces

The acceptance of total national defence has resulted in a profound change in the role of the regular armed forces, the YPA. One would expect such far-reaching change to generate tensions within the professional military, and some evidence of this has come to light. Post-1968 professional discussions on total national defence revealed two lines of criticism. A 'romantic Partisan' element advocated an even more radical return to the decentralized organization and small-scale tactics of the Partisan War; its spokesmen were usually identified with the cause of republican and national self-assertion in Croatia and Slovenia and sometimes advocated the formation of fully-fledged republican armies. The other, 'conservative' element resisted the de-emphasizing of the YPA and the 'territorialization' of national defence. It is a clear indication of both the flexibility of out-look of the YPA senior officer corps and the YPA's institutional subordination to the League of Communists and Tito personally, however, that it has apparently without undue friction adapted to the new system of national defence.

The fundamental departure from earlier practice is shown by the fact that the YPA is no longer *the* Yugoslav military institution, but now is complemented by the larger TDF which is doctrinally and legally on an equal footing and not — even in war-time — subordinate to the YPA. On the other hand, Yugoslav doctrine does not involve, as in the Swiss pattern, the transformation of the YPA into a professional training corps for a single militia of citizen-soldiers. The active YPA must be able on its own both to resist a limited incursion and to delay a massive attack long enough for the country to carry out total mobilization. In the latter case, the YPA would wage an active defence in depth throughout the country, transforming itself into smaller units waging predominantly partisan warfare alongside the TDF only if large-unit combat failed to dissuade the enemy from continuing his attempt to subjugate the country.

This fundamental change in the YPA's role has, in turn, given rise to specific changes in the YPA organization. Firstly, judging by Yugoslav military writings, the YPA will undergo some further reduction in size, while being turned into a more mobile, better-armed force. While the Air Force (part of the unified YPA) might aspire to an air-defence role with ultra-modern fighter aircraft similar to that of the Swedish air force, this exceeds Yugoslavia's economic capabilities. Doctrinal as well as economic limitations have led the Navy to abandon earlier plans for expansion of a Mediterranean capability in favour of coastal and island defence. The major goal of continued modernization of the YPA is the development of modern mobile infantry, well equipped with anti-tank and anti-aircraft weapons. As in the past,

(Continued on Inside Back Cover) **YUGOSLAV**

TIME FOR A DISASTER PLAN CHECKUP?

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> "On-Site Assistance to prepare communities to meet disasters is a new way to do an old job. No longer do our people go into a community to discuss communications problems one time, shelter another, or radiological defense a third. Now it's a little like local officials taking a trip to a clinic, except the clinic comes to them. They work with our people to take a total look at the state of their community's civil preparedness and what can be done to improve it. Then they do it."
>
> John E. Davis, Director
> Defense Civil Preparedness Agency

America's cities, towns, and counties face a serious disaster problem. Every day, there are more Americans, more crowding, more human and material wealth to lose if a tornado, or flood, or nuclear attack strikes. Every day, Americans become more dependent for vital services on our complex social and economic machine so easily disrupted by disasters.

In 1972, there were a record 48 major disasters declared by the President. They cost more than ever in property damage, and only the increasingly coordinated and effective work of public and private agencies at all levels prevented them from costing a record number of lives.

Faced with this situation, leaders of many communities across the nation are seeking professional help in diagnosing the condition of their local emergency readiness. Planning to meet this need, and providing expert advice on ways to meet it, is the job of the nation's local civil preparedness (civil defense) coordinators. They are backed up by the personnel and resources of state civil preparedness agencies, plus the Defense Civil Preparedness Agency (DCPA) in the Pentagon and its eight regional offices.

The diagnostic and treatment process is known as On-Site Assistance, or OSA. When the leaders of a community request it, and agree to take reasonable follow-up actions to correct defects found, a combined DCPA and state civil preparedness team comes into a community to conduct factfinding interviews with local officials and to evaluate what is good and what needs to be changed. The emphasis is on practical recommendations within the resources of a city or county. Often they are small in scope — but they can become important.

In Baldwin County, Ala., in the hamlet of Rosinton, they found this out last November. Early in 1972, an OSA team, which was updating emergency plans for schools as part of its survey for county officials, recommended that students in the Rosinton school be assembled in a structurally stronger classroom area — not the gymnasium — if a disaster threatened. The school was struck by a tornado last November, but not before the children had been moved to the classroom shelter area. The gym roof caved in, but there were no casualties, thanks to the advance planning of civil preparedness professionals and to a school principal who took the plan seriously.

OSA teams in other places have found many little things that could loom very large in the stern test of a real disaster. In one Texas town, for example, team members found there were no communications links between the town's warning center and the location of switches to sound the sirens. In a Florida city, emergency radio sets were found useless because they weren't hooked up to antennas. Quite commonly, local emergency plans have become outdated, lost, or forgotten in files. Often, radio backup systems to replace telephones knocked out by a disaster have been determined to have too little power or the wrong frequencies to reach essential emergency services such as hospitals and outlying fire stations.

Since the OSA program first began in early 1972, many communities across the nation have requested an OSA project. By the end of 1972, there were 412 cities, towns, or counties participating in the program, accounting for about 16 per cent of the national population. All states except Rhode Island were involved, plus Puerto Rico. Of the 412 participating jurisdictions, 136 had already completed and published "action plans" detailing specific projects for improving local emergency readiness. These are now being implemented.

Local leaders thinking of enrolling their communities in the OSA program should be prepared to commit much time and effort of their own. The federal-state staff assistance is free, but it is a cooperative program intended to help a community help itself. Because there are more local applicants for OSA than there are federal and state personnel available to service them, and because much federal-state staff time is devoted to each OSA project, applicants are carefully screened. Most localities selected for OSA up to now have been in disaster-prone areas, had some sort of civil preparedness program in being, and were deemed to be potentially receptive to OSA activity.

Local jurisdictions applying for OSA become involved in an eight-step process:

(1) *Selection of a Community* based on the above criteria, and agreement by all parties on a date for the on-site effort to begin.

(2) *Advance Preparations,* involving intensive homework on the community by OSA team members, and a visit with local officials to draw up schedules and lists of those to be interviewed.

(3) *A Preliminary Visit,* about two weeks before the start of interviews with local officials, for final review of work plans, and to afford an opportunity for local officials to commit themselves publicly in favor of the project through announcements to the news media.

(4) *The Survey Phase* actually kicks off the ballgame, starting with a public meeting at which the objectives of the survey are clearly identified. This is followed by intensive interviews of local officials by team members. Actually, successful interviews seldom follow a question-answer format, for the information being sought usually just falls out on the table during friendly discussion. Frequently, the local official being interviewed asks more questions than his interviewer as he seeks to find out what community civil preparedness is all about — who does what, when, and how.

When the interviews for each day have been completed, the OSA team leader gathers his interviewers together to correlate their results and determine what further information is needed.

(5) *Summary and Recommendations* are developed by OSA team members about a week or so after completion of the interviews, based on information obtained. Local officials carefully review them. It is important to note, though, that the summary and recommendations are *not* keyed to the past actions or present performance of local government. Rather, they are designed to determine the course of future actions, and the manner in which federal, state, and local resources can best contribute to developing a local capability for coordinated lifesaving operations in an emergency.

(6) *An Action Plan* is then drawn up jointly by OSA team members and local officials, based on the portions of the summary and recommendations found by local officials to be acceptable and useful. It is also based on an assessment by local officials of what they realistically feel they can accomplish. Plans are made to overcome deficiences on a first-things-first basis, including target dates for completion and assignment of responsibility to specific persons. When the document's provisions are agreed upon by all those involved, it is signed by the local elected officials, the state civil preparedness director, and the DCPA regional director.

(7) *Immediate Followup Activity,* sometimes known as the "Treatment Phase," involves carrying out those activities in the action plan which can be done very quickly. Sometimes, a key piece of equipment, or some vital technical assistance, is all that's needed to move ahead quickly on an important project within the community. The federal partners in the community's OSA project make every effort to prove their "good faith" by quickly arranging for the missing item when it is possible to do so.

(8) *Continuing Followup Activity* involves the long-range, complex, or expensive projects identified by the OSA survey as needed by the locality, and achievable only over a period of months or even a year or more. The design and construction of a protected emergency operating center for the community, training of local leaders in disaster decisionmaking, or training in special techniques such as radiological monitoring fall into this category.

Local officials can do much to analyze their community's emergency readiness by using the Civil Preparedness Checklist with this article. It is also useful in deciding whether to apply for an OSA survey. If the local decision is to apply for OSA, this may be done by contacting the appropriate state civil preparedness agency.

To show how an On-Site Assistance Project works in a community, take the case study of Pensacola-Escambia County, Fla., which has a city-county civil preparedness agency. The area had one of the first OSA projects in the United States . . . and it's still one of the best examples of what can be done.

On-Site Assistance came very early to Pensacola because of a tempestuous "lady" called Camille — Hurricane Camille. Local officials took a look at the incredible damage done by Camille to the Mississippi Gulf Coast in August 1969 and their own exposed position on the Gulf. They decided something must be done.

Discovering that their local civil defense organization was not set up to coordinate the work of existing agencies of local government, officials of the city and county on July 22, 1971, appointed retired Real Admiral Magruder H. Tuttle as Civil Defense Director and instructed him to reorganize the function. [During preparation of this article, a political realignment took place in Escambia County. The county's new acting civil preparedness director is Sheriff Royal Untreiner. Admiral Tuttle remains as an adviser to the program.] In October 1971, the chairman of the county commissioners learned of the On-Site Assistance concept from a DCPA Region 3 field officer. Both the board of

Coordination, not Domination

One of the most common questions asked by local officials of OSA interviewers is: "When does a disaster get so bad that your civil preparedness people come in?"

The answer is, of course, that civil preparedness people *don't* "come in," and *don't* "take over." If the local civil preparedness coordinator has done his job, with the help of state and federal counterparts, he has prepared plans and a protected command center—called an Emergency Operating Center—so that the community's regular officials can work efficiently together to meet a major emergency, with adequate communications and a clear understanding of who does what.

The local coordinator's job, then, is just that—to "coordinate" the work of operating officials under unfamiliar disaster conditions in behalf of local elected executives. He makes sure the "operators" are not unintentionally pursuing conflicting activities as they direct normal work forces, or inadvertently overlooking something that should be done.

county commissioners and the city council voted to request an OSA project. The application was submitted through Col. George L. Robinson, Director of the Florida Division of Emergency Government, to DCPA Region 3 Director Claude B. Thompson, who quickly approved it. James O. Souders, a Region 3 field officer was assigned to head the OSA project. Step 1 was completed.

Step 2 and 3 advance preparations and preliminary interviews and briefings for local officials took place in December 1971. Then, from Jan. 10 through Feb. 1, 1972, a nine-member (larger than usual) OSA Step 4 survey team conducted in-depth interviews with more than 100 local officials and civic leaders. Based on survey data, team members prepared a Step 5 summary and recommendations document, and, on Feb. 14, the county board of commissioners and city council jointly and unanimously approved the recommendations.

The OSA team returned to Pensacola March 6-8 to develop with the city-county civil preparedness staff a Step 6 action plan. After it was drawn up, the action plan was approved by both the county administrator and the city manager.

What happened then can best be described by using one of many examples in the action plan — this one dealing with recommended improvements in the area's warning system. This is especially vital in an area subject to both hurricanes and tornadoes, and having a major nearby naval air base that could be a prime target in wartime.

The action plan dealing with the warning system establishes deadlines and specific assignments to individuals for completion of various projects. The Step 5 summary to which it refers notes:

"The city/county does not have the current capability to warn all of the population in an acceptable period of time in the event of a nuclear emergency. The existing warning system is limited in geographical coverage. In some natural disaster situations, there would be sufficient time to warn the majority of the population with existing sirens and through the electronic news media.

"The Emergency Broadcast System (EBS) station for Pensacola/Escambia County is WCOA (Radio), which is fallout protected and has emergency power and fuel for extended operations. This station has been licensed to remain on the air during *nuclear* emergencies. Their primary function during this period is dissemination of official information to the general public. Other stations would, in all probability, be off the air."

Recommendations on the action plan note simply that "a warning study must be conducted to determine if there is a need for additional equipment to provide countywide coverage."

A warning study was conducted by the warning and communications coordinator for the city-county civil preparedness agency. He was assisted by a team of specialists from DCPA Region 3 and the U.S. Army Strategic Communications Command. His report carefully lists all local means of reaching the public in a peacetime emergency, including commercial radio and television stations, a cablevision network, three background music systems, the communications systems of two large local industries, and the radio and telephone facilities of city police, county sheriff, city fire department, two taxicab companies, the county health agency, three hospitals, the county commissioners, two public utility companies, 11 county volunteer fire departments, the Florida Highway Patrol, and a local ambulance service. In addition, it lists the 18 civil defense sirens and the meaning of their signals.

Sources of warning also are noted. The National Warning System (NAWAS), a 170,000-mile wire network centered at the North American Air Defense Command at Colorado Springs, reaches more than 1,800 warning points nationwide as the primary system for warning of enemy attack, and also serves as a secondary system for use in natural disasters. Two of those warning points are in the Pensacola police headquarters and in the city-county civil defense communications center. Other warning sources for peacetime disasters to which the civil defense communications center is connected are the Severe Weather Warning Center of the U.S. Weather Service at Kansas City, Mo.; the Pensacola National Weather Service Center; the Weather Facility at the Pensacola Naval Air Station; and, of course, local telephone and radio links in the center.

Despite these extensive communications and warning ties, it was obvious from the study that it would be difficult and too slow locally to pass warning of a threatened disaster to key points by using existing equipment. The city and county governing bodies set aside $26,000 to buy improved communications equipment. This consisted of $13,000 in locally appropriated funds and $13,000 in federal matching funds from DCPA. Part of this went for the purchase and installation of a radio transmitter and encoder for the civil defense headquarters and receivers placed in the news media, school principals, offices, hospitals, factories, public utilities, and key government offices. Using this equipment, the civil defense director or his staff, through a special electronically coded beep from his transmitter, can turn on all these receivers and transmit warning or disaster information immediately after it is received.

What was done for warning is typical of the thorough analysis by the OSA Survey Team and followup specialists in other civil preparedness fields. Special plans have been prepared on communications, the county sheriff's department, the city police, urban fire and rescue services, rural fire services, city and county engineering departments, the welfare department, health and medical facilities, evacuation procedures, natural disaster procedures, personnel training, and plans to keep the public informed.

Noting the extent of these comprehensive plans, Admiral Tuttle commented that "the best part of the On-Site Assistance program was the followup, in which groups were sent in to study our warning, communications, training, and other fields." He also noted that "we in civil defense are helping the people (local officials) organize to do the disaster job who are going to have to do it anyway in a real emergency. But the good thing about On-Site Assistance is that, when these (OSA) people come into our community, we can take the time to really get around and talk to all our local officials. Local civil defense doesn't have the manpower to do this."

The heavy stress on planning is in line with Admiral Tuttle's civil preparedness philosophy. "Nine-tenths of meeting an emergency," he says, "is planning in advance, testing procedures, making 'what if' contingency plans, and arranging for who does what, and how."

The job of a good local civil preparedness director is to see that those plans are made — to think about the unthinkable — and to needle or plead with other local officials to take time from more immediate concerns to think about potential disaster, too.

The lessons learned and procedures developed in Pensacola and other On-Site Assistance areas can be adapted to any city or county . . . *your* community. Is it prepared? ▲

YUGOSLAV *(Continued from page 21)*
most weapons will be locally manufactured. At the same time, both military and political leaders insist that it would be futile for Yugoslavia to attempt to compete with a great power in tanks, sophisticated aircraft, or other heavy modern weaponry and that modernization of the YPA must not delay the arming of the TDF.

Secondly, the build-up of the TDF has meant a sharp lowering of YPA reserve levels. At present, 80 per cent of YPA conscripts are subsequently assigned to the TDF; 20 per cent to the YPA or its active reserve. The inactive YPA reserve has in effect been abolished.

Thirdly, the nature of military manoeuvres has been drastically changed. In the early 1960s, YPA manoeuvres usually simulated conventional defence of cities, including the mass evacuation of non-combatants. In the past four years, by contrast, manoeuvres have usually involved joint defence by YPA and TDF units against large-scale armoured invasion (in Vojvodina, a large plain bordering on Hungary and Rumania) or airborne assault (throughout the country). 'Freedom-71' was the first mass test of the new defensive system. As indicated by 'Podgora-72', Yugoslavia now intends to schedule such large-scale war games regularly.

Fourthly, the YPA has begun to transfer some support functions — examples are medical care, food supply, some engineering services — to the TDF or the civilian sector.

Total National Defence as Deterrence

Yugoslavia has made considerable progress in elaborating details of the doctrine of total national defence and translating doctrine into organizational and institutional change. The viability of total national defence will depend on the successful continuation of this process and ultimately, of course, on the health of Yugoslavia's political and social order. The new doctrine is in line with the post-1965 economic decentralization in providing for the marshalling of funds for defence at the local and republican, as well as at the federal level. It is in harmony with the parallel political decentralization or 'republicanization' — a process limited but not fundamentally reversed by the 'Croatian crisis' of December 1971, the 'Serbian crisis' of autumn 1972, and the League of Communists' efforts to reconstitute an all-Yugoslav 'political centre'. The new territorial forces constitute a potential political counter-weight to the YPA, although this factor should not be overstated. While the YPA remains the strongest all-Yugoslav institution, in the latter 1960s its exclusivist and supranational character was mitigated substantially. The YPA is, for example, at the moment greatly concerned with improving the proportional representation of all of the country's ethnic groups in the officer corps (which is still dominated at lower levels by Serbs). Observers who are pessimistic about Yugoslavia's future internal cohesion interpret the adoption of total national defence as in effect arming the country for future civil war. More optimistic observers point to the self-confidence of the political leadership in arming the country for defence as a positive omen for the future.

However one may judge these internal considerations, the doctrine of total national defence is a prudent response to Yugoslavia's felt external threat. It takes into account both strengths and weaknesses of a potential superpower invasion force and makes a virtue out of economic and political necessity. Total national defence, while incorporating aspects of the Yugoslav Communists' Partisan experience, represents more than a nostalgic revival of successes now twenty-five years old. It is an effort to apply principles of 'people's war' (which Tito pioneered, no less than Mao, Giap, or Guevara) to a consolidated, semi-industrialized state faced with the possibility of external aggression from a much stronger enemy and taking into account domestic and international political and economic realities, and the state of contemporary military technology.

More specifically, Yugoslavia seeks to deter Soviet political threats or invasion, now and in the post-Tito period, by demonstrating that a Czechoslovak-style road march into Yugoslavia is not possible; that an invasion would have unpredictable consequences; that an attempt at occupation would be bloody, prolonged, and expensive in terms of manpower and *matériel;* and that, if a *blitz invasion* were indeed transformed into a protracted conflict in which Yugoslavia would seek assistance from outside, then it would involve a risk of super-power confrontation. ▲

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