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# Naval Protection of Shipping: A Lost Art?

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Captain S.D. Landersman, U.S. Navy (Ret.)

**W**hen the Navy Department was founded in 1798 its primary mission was to protect American merchant ships. A century and a half later, the National Security Act of 1947 was the authority for the roles of the U.S. Navy. They are:

- provide the naval component of strategic deterrent forces,
- provide the naval component of overseas deployed U.S. forces, and
- ensure the security of sea lines of communications.

Under “Functions of the Department of the Navy,” Secretary of Defense and Secretary of the Navy directives contain a list of primary functions which include, “Organize, train and equip Navy . . . forces for the conduct of prompt and sustained combat operations at sea . . . specifically, . . . to protect vital sea lines of communication . . .” *NWP-1 Strategic Concepts of the U.S. Navy*, reiterates the above functions and provides a statement of the U.S. Navy’s Mission, which is, “to be prepared to conduct prompt and sustained combat operations at sea in support of U.S. national interest.” The national interest refers to the U.S. national military strategy, which is a “forward strategy” dependent on the Navy’s role of ensuring security of sea lines of communication.

Protection of the sea lines of communication (SLOC) is not a peripheral function, collateral duty, or secondary role of the Navy. It is one of the very basic Navy roles, one of the Navy’s principal functions, and an integral part of the primary mission of the Navy. SLOC protection, then, is one of the basic reasons we have a Navy.

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## Sea Lines of Communication

The term “communication,” as applicable to the use of the term SLOC in the Navy roles and functions, refers to a system of sea routes for moving the logistics of war—the troops, supplies, ammunition, weapons, fuel, and vehicles. This was the meaning intended by Alfred Thayer Mahan when he used the term “lines of communication” to describe the routes of logistic flow over the oceans to support land campaigns. Mahan offers numerous historic examples that demonstrate the importance of maintaining the SLOC. They illustrate that the strategic concept of striking at an enemy’s SLOC was valid in the past, is valid today, and will continue to be valid in the future.

SLOC protection applies to both the Mahanian concept of logistics in support of a land campaign and to the logistics necessary to maintain the naval component of U.S. forces deployed overseas. U.S. Navy deployed ships and aircraft require support to remain at sea in an effective combat status. The logistical flow of fuel, food, repair, personnel and weapons for the Navy would rely upon the SLOC just as would the logistical support for overseas troops. Navy logistics would move primarily in ships of the U.S. Navy and of the Military Sealift Command (MSC). The majority of sealift for support of a major land campaign would be carried in merchant ships, and security of the SLOC must extend to these merchant ships.

Bernard Brodie, Professor of Political Science and noted author of several works on modern war, tells us that in a NATO-Warsaw Pact war the total seapower of NATO would be used to protect merchant ships at sea, and that all naval enterprises would be used for the single purpose of protecting the freighters and tankers which would carry nearly all the vital resources.

## Merchant Shipping

The Western merchant ship inventory is listed in the *Particulars of Merchant Ships (SACLANT NCS-1)*, a NATO publication which provides data on more than 28,000 merchant and fishing ships of 105 non-Warsaw Pact countries. These ships are at least 1,000 gross registered tons or over 76 meters in length. While not all of these ships would be used by NATO in a major war, many would be called upon. A more realistic listing of “available” merchant ships that would impact on NATO logistic support would be:

MSC Nucleus Fleet	58
MSC Charter Ships	61
U.S. Flag Merchant Ships	545
Effective U.S. Control Ships	639
Ready Reserve Fleet	32
National Defense Reserve Fleet	245
Allies' Merchant Ships (designated for NATO contingencies)	400

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- MSC Nucleus and Charter Ships are available on short notice.
- U.S. Flag Merchant Ships include about 400 dry cargo ships. Many of these are containerships. Less than half of U.S. military equipment fits into these containers.
- Effective U.S. Control Ships are known as "Flag of Convenience" vessels. While their status in wartime is questionable, most would be available. The majority are tankers.
- Ready Reserve Fleet are modern ships not in use but available in 5 to 10 days.
- National Defense Reserve Fleet are mostly older ships which would take 2 to 3 months to make usable.

### Control and Protection

Two separate but closely related functions must be understood—Naval Control of Shipping and Naval Protection of Shipping. (As the name implies, naval control of shipping involves the control of cargo-carrying merchant ships, not their protection.) The Navy's responsibilities in both control and protection of shipping are delegated by the Chief of Naval Operations to cognizant fleet commanders in chief. The U.S. Naval Control of Shipping Organization (NCSORG) exists to provide for the safe movement of merchant ships in wartime. NCSORG would perform the functions of routing, reporting, diversion of shipping, and organizing convoys. Except for a few active-duty Navy billets, Naval Control of Shipping would be accomplished by 3,600 Reserve personnel who continually train for their wartime mobilization roles. In peacetime MSC performs these functions for the MSC nucleus fleet and charter ships.

The objective of Naval Protection of Shipping is the safe and timely arrival of shipping at scheduled destinations. To accomplish this, a combination of offensive and defensive operations is required. This could include operations remote from the SLOC—such as barriers, strike operations, surveillance—as well as close-in defense. As protection of shipping is a part of the overall sea control operations in an area, the responsibility for naval protection of shipping rests with the naval commanders in chief. This responsibility is delegated to Operational Control Authorities (OCAs), who are responsible for the actual implementation of shipping protection measures. In the Atlantic, OCA functions are performed by CINCLANTFLT and COMNAVFORCARIB. In the Pacific, CINCPACFLT, COMTHIRDFLT, and COMIDEASTFOR are OCAs. The European theater OCAs are CINCUSNAVEUR and COMFAIRMED. OCA responsibilities generally include both control and protection of merchant shipping, but in some cases, COMSEVENTHFLT for instance, the responsibility is limited to protection

## Convoying Method of Protection

While cost effective in the use of naval assets, convoying's disadvantage is reduced cargo productivity because of delays in convoy formation, slower transit speeds and port congestion at destinations. Under the convoy control system, NCSORG would form groups of merchant ships in ports and provide them with organization, routing, and reporting means. Naval auxiliaries may also be included. The OCA would establish the assembly points, give details of sailing intervals, and promulgate other special instructions as required. Military convoys and military independent ships would not be controlled by NCSORG. Details of the convoy formation, sailing folder, convey conference, departure, routing, reporting, communications, and port entrance are contained in *ATP-2, Allied Naval Control of Shipping Manual*. Procedures for protection which are not functions of the NCSORG are contained in *NWP-31, U.S. Naval Protection of Shipping* and *ATP-1: Vol. I, Allied Maritime Tactical Instructions and Procedures*.

**History of Convoying.** In April 1917 German submarines sank 444 merchant ships and the allies faced defeat because of the effectiveness of the German blockade. The convoy system was initiated and six months later, a total of 10 ships were lost out of 1,500 convoyed merchant ships.

In early 1942 the Germans had 30 submarines on station and the allies were convoying about 40 percent of their shipping. One and a half percent of the convoyed ships were sunk while seven and a half percent of the independent sailing ships were sunk. Later that year the allies were convoying 80 percent of their shipping and the loss rates were about the same although the Germans then had 50 submarines on station. Convoying in World Wars I and II clearly resulted in safer transits for merchant shipping than was provided by independent sailing. There were a few exceptions, particularly the large high-speed passenger ships which sailed independently and were not sunk.

While the results of convoying in World Wars I and II are impressive, they could be misleading. The primary threat then was the diesel electric submarine. Today, and in the future, it is the high-speed nuclear attack submarine with unlimited submerged endurance, antiship missiles, long-range homing torpedoes, supported by a complex ocean surveillance system. Also, an increased threat from land-based aircraft must be considered. But merchant ships now are generally larger and faster and antisubmarine capabilities have improved with underwater surveillance systems, communications intercept, multiplatform coordination procedures, sensor improvements, and homing weapons. Factors which produced effective convoying in the past have been altered and there is a need for analysis, simulation, and fleet exercises to determine the most effective procedures for the future. Yet until proven otherwise, convoying remains the

**Destroyer Escort Background.** The class of ships that were used for merchant ship protection, called “frigate” today, can trace their origin to World War II. In 1941 a new class of ship called the DE or destroyer escort joined the fleet. The DEs were intended to protect merchant ships against the submarine. As antisubmarine ships for screening convoys, they were slower, smaller, had less armament, and were lighter in construction than destroyers, but they had some of the best ASW capabilities of their day. As an ASW weapons system, the DE was at least as capable as the WWII destroyer.

Although the maximum speed of the World War II-built classes of DEs remained about the same (21 to 24 knots), some were diesel powered, some turbo electric, and some had geared steam turbine propulsion. All DEs built during World War II had two shafts, while those DEs and FFs built since World War II have a single shaft for main propulsion. The need for plant redundancy and increased survivability was dominant during the war. In peacetime cost considerations prevailed and a single engineering plant was standard in the newer ships. The post-World War II DEs and FFs with their single engineering plants have maximum speeds of 24-28 knots.

In the 1950s the DE classification name was changed from destroyer escort to escort vessel, then to escort ship, and finally to ocean escort. But DE designation remained, as did the hull numbers, and missions of the ships. In 1975, the DE ocean escort classification was changed to FF frigate to conform with most of the world navies' designations of such ships. In its brief history, the destroyer escort of World War II passed through four classification changes and a designation change from DE to FF. But change of purpose was not a part of the change in classification or designation, so the frigate (FF) of today exists for the same purpose as its World War II predecessor—the destroyer escort (DE). That purpose was, and still is, protection of merchant shipping.

As the primary threat to merchant shipping has expanded from enemy submarines to include enemy aircraft and missiles launched from submarines as well as aircraft, the DEG was introduced. Later, the DEG became the guided missile frigate (FFG). The frigate is still basically a single purpose ship, and that purpose is protection of merchant shipping. Some frigates are optimized for ASW work, others for AAW, but each one is intended to perform the merchant ship protection role. These capabilities can be used for other similar roles, such as escorting underway replenishment ships or amphibious groups. Frigates can also be seen in carrier battle groups, but they were not intended for such employment.

**Fleet and Reserve Unit Training.** *NWP-31, U.S. Naval Protection of Shipping* provides the U.S. commander with doctrine and procedures for the use of naval forces in the protection of shipping and SLOC control. It provides for a ~~times~~ phased implementation including actions to be taken prior to hostilities,

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during the early days of a war, and over a long term. *NWP-31* offers various methods of ship movements and a number of means of providing protection to merchant ships at sea. However, at present there are no active operational activities of the Navy dedicated to the development, training, or exercise of naval protection of shipping. Not so in the recent past. For example, prior to 1961, Commander Destroyer Flotilla TWO of the Destroyer Force, U.S. Atlantic Fleet was tasked primarily for protection of shipping matters. The flotilla contained most of the Atlantic Fleet DEs. Commander Destroyer Flotilla TWO also served as Commander Task Group Charlie and was tasked with training for and developing tactics related to naval protection of shipping. Convoy escort procedures, including coordination with maritime patrol aircraft, were also developed.

In 1961, the destroyer force and the cruiser force of the Atlantic Fleet combined into CRUDESANT and the three destroyer flotillas and three cruiser divisions became six cruiser destroyer flotillas. Some of the protection of shipping specialization "melted" away. In 1971 the amphibious force, service force and CRUDESANT were combined into COMNAVSURFLANT. A similar process of reorganization went on in the Pacific. With these reorganizations, the DEs—which had been in their own escort squadrons—were integrated into destroyer squadrons, and convoy escort development and training disappeared. Since the DE became designated a frigate (FF), it has been treated as a general purpose destroyer with little to no involvement in the protection of shipping.

Fleet exercises are routinely scheduled today to provide opportunities for the reserve forces to evaluate procedures and to train in control of shipping protection. Four RAINBOW REEF exercises per year provide NCSORG personnel, convoy commodores, and associated staffs training in convoy procedures using the Near Term Prepositioned Ships, now called Maritime Prepositioned Ships (MPS), in the Indian Ocean. Both the Atlantic and Pacific Fleets conduct one or two convoy exercises (CONVEXs) each year using amphibious and MSC shipping. The Atlantic Fleet also conducts one OCEAN SAFARI convoy exercise every two years. A few command post exercises are held each year for NCSORG personnel. In the RAINBOW REEF exercises, MSC chartered ships form a convoy in the vicinity of Diego Garcia and practice convoy procedures. These ships practice every month and are the most experienced merchant ships in the world in convoy procedures. Rarely is protection provided in the monthly exercises of the MPS or to the quarterly RAINBOW REEF exercises. Protection is seldom included in the CONVEX and very few merchant ships participate. In the CONVEX, the convoy is often formed with amphibious ships, and without protection, these ships provide a training opportunity for a convoy

Although the training opportunities exist for naval protection of shipping in fleet exercises, little to no use is made of them. Officers who have had frigate commands typically have not had experience in providing escort services to merchant ships, receive no formal instruction in protection of merchant shipping, and are not aware that the senior officer of the escort force would be the Officer in Tactical Command (OTC) of such a group.

Using amphibious ships and underway replenishment ships formed in a convoy has some value for training but falls considerably short of the considerations regarding convoying merchant ships. Most naval officers know very little about merchant ships. Amphibious and underway replenishment ships have capabilities in ship control, command, and communications (C<sup>3</sup>) far in excess of merchant ships. Combat Information Center, radio communications, visual signals, and bridge manning are absent or considerably different in merchant ships, and false impressions are easily developed when convoy procedures, derived from Navy ship convoys, are translated to merchant ships.

In addition to the lack of training in naval protection of shipping in fleet exercises and the absence of formal instruction, there is a lack of cognizant staff positions on major staffs. It is rare to find someone on a major staff with the responsibility for naval protection of shipping. Although it is included in many war games at the Naval War College, shipping protection is not played in detail and seldom is there any interest in this basic function of the Navy. Shipping protection is not considered glamorous. Protection of carrier battle groups gets a great deal of attention. The battleship and the amphibious group get their share of attention, but not the merchant ship.

It is well established national and allied policy that the escort force commander is the Officer in Tactical Command (OTC) of the merchant ship convoy. This means that if three frigates are escorting a fifteen-ship merchant convoy, the senior frigate commander will be the OTC of the convoy and escort force—no matter what the rank of the convoy commodore. Although other arrangements for designation of OTC exists, the clear intent of existing doctrine is that the escort force commander will be the OTC.

The function of OTC of a 10 to 30 ship group including convoy and escort requires command, control and communications considerations beyond that of a coordinated unit. These OTC considerations should not be overlooked in the training of a frigate commander or the configuration of future combatant ships for protection of shipping.

**Convoy Commodore Training.** The convoy commodore serves as OTC only when no escort is provided. Retired Navy captains and above are selected for convoy commodore training from among those who have had significant tactical command at sea, are under 60 years of age, and are physically qualified. The officers selected must accept this opportunity attend a



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two-week course which provides instruction, lectures, demonstrations, and practical exercises in: U.S. Civil Direction and Naval Control of Shipping Organizations; U.S. Merchant Marine and merchant ship characteristics; control of shipping communications systems; convoy planning including routing, organization, sailing and forming; the threat to convoys; and convoy at sea operations including communications, maneuvering, emergency procedures and protection.

In the event of national mobilization these retired officers would be called to active naval service at their retired rank for duty as convoy commodores in command of merchant ships convoys. The authority and responsibility of the convoy commodore would be limited to the control and safe transit of the merchant ships in the convoy. The convoy commodore would have no authority over any Navy ships or any component of the escort force. There are about 125 designated convoy commodores with a turnover rate of about 15 per year. The RAINBOW REEF and CONVEX normally provide at-sea training opportunities for eight convoy commodores per year. The remaining have little or nothing to do with the program after completion of their two-week training course. Preparation and experience of the convoy commodore focuses on conveying as the primary means of protecting shipping, but "conveying" and "naval protection of shipping" are not synonymous.

### Alternative Protection Methods

Conveying is but one means of protecting shipping. Other primary methods are independent sailing and protected lanes. Each system has advantages and disadvantages, and an operational commander must consider all three for a given tactical situation, including mixes. While considerable detail, data, and doctrine exist on conveying, very little documentation is available on independent sailing or protected lanes. Consequently, the operational commander may not have a freedom of choice in his selection of a protection method. Because of a lack of background information on independent sailing or protected lanes, a decision to employ convoy protection could be *pro forma*.

**Independent Sailing.** A better name for this method of shipping control and protection would be "merchant ships sailing individually," because the ship is not independent. It is selected, routed and controlled during transit by the NCSORG. Certain ships—because of their speed, cargo, port of departure and destination—are permitted to sail independently by the OCA. These ships are routed and sailed under conditions similar to those used for convoys.

The routing is based on intelligence and tactical information by the OCA.

Factors considered include avoidance of certain areas because of knowledge

or suspicion of enemy submarines and deliberate routing through other areas of ongoing antisubmarine operations for protection. Ships permitted to sail independently can commence their transit as soon as they are loaded. They can proceed at their own best speed rather than the speed of the slowest ship in a convoy. Upon reaching their destination, independently sailed ships can usually be unloaded immediately rather than queuing for unloading with other ships of the convoy.

**Protected Lane.** The protected lane involves sanitizing a geographical area against the submarine threat followed by the installation of a barrier or protected perimeter that provides for penetration warning. It can also involve the positioning of own forces at the perimeters for attack, destruction, and/or neutralization. Protective forces are positioned along a transit route. Each unit of the protective force is assigned an area of responsibility, the size of which depends upon the speed and sensors of the protective platform, perceived threat, environmental conditions, and weapons involved. Ships, aircraft, submarines, and fixed arrays could be employed along the protected lane. Merchant ships proceeding along the protected lane are passed from one area of responsibility to the next, but it may be necessary to have gaps or unprotected spaces between the protected areas.

Tactical publications provide very little detail on the protected lane. *AXP-5*, a NATO publication on experimental tactics, offers some perspective on a protection lane, but it is unclear and virtually unmanageable. A more comprehensive publication detailing the employment of the protected lane is needed.

## Protection Method Comparisons and Strategic Considerations

Convoying has the advantage of making economical use of the forces available for protection—resources available for protection are employed directly in protecting the convoy, whatever its size. Four frigates could be assigned to escort a ten-ship convoy, or they could escort as many as forty ships.

Once an enemy locates the convoy and attacks a ship, the immediate presence of the escort force gives a greater probability of damaging or destroying the enemy. Hence there is a tendency to reduce the losses to the convoy and increase the kill probability of the attacker. The presence of escorts for the convoy also ensures accurate and secure communications between shore and ship.

An enemy may find it nonproductive to send out large numbers of aircraft to search for, localize, and attack individual merchant ships sailing independently on the open ocean. On the other hand, a large convoy of 50

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merchant ships would provide such a lucrative target that an enemy commitment of regimental-sized aircraft raids, massed submarines, or surface combatants would be difficult to resist. With the cargo carrying capacity of modern merchant ships, a 50-ship convoy would represent an important portion of military logistic resources, the destruction of which could have considerable impact on the U.S. or NATO warfighting ability in a major conflict.

An independent merchant ship at sea, intercepted by an enemy, provides one target. If the individual merchant ship is destroyed, the enemy must then search for another target. Proper routing of these individual merchant ships can take advantage of both the protection afforded by U.S. and allied at-sea operations as well as weather, and threat avoidance. Existing procedures mandate that NCSORG give presail routing to the ship. This should be expanded to provide continuous positive control during the full transit so that diversions or changes can be directed as necessary. For this an OCA would require a command center staffed to deal with merchant ship traffic of his area, provided with communications, displays, and inputs from intelligence, operations, and oceanographic sources.

As the number of convoys increases, the need for direct support protective forces increases. In the protected lane method, a fixed level of protective forces is used to defend whatever level of shipping is used. The protected lane is a special variation of independent sailings—the merchant ships proceed at their best speeds as soon as loaded over a prescribed route. The major difference is that instead of taking advantage of opportune defensive forces for independent sailing, the protected lane uses forces deliberately positioned and dedicated to shipping protection. Each ship can commence the transit as soon as it is loaded, and congestion at the unloading port is reduced by normal spreading out of arrival times. Similar to independent sailing, an intercept by the enemy results in but one target. Economical employment of protective forces is realized in the protected lane, as once the lane is established a large number of merchant ships can use it, receiving protection from the same number of protective forces. In general, the protected lane combines the advantages of both independent sailing and convoying, without the disadvantages of those systems.

A disadvantage of the protected lane results from the static nature of the barrier-like structure. Once an enemy detects the establishment of the lane, targets on the predictable path can be attacked. To overcome this deficiency the lane should gradually shift laterally and the protective unit position coordinated with the movement of the other units in the lane. The merchant ships using the lane would be directed to proceed from one protected area to the next, making a transit over the continually shifting route. The shifting defended lane (SDL) and the merchant ships using it must be orchestrated by a sophisticated command center from which detailed instructions emanate.

The SDL incorporates the advantages of independent sailing and convoying without some of the disadvantages of the protected lane. The SDL requires a complex command, control, and communications system and would include: determining the size of each area, assigning of protective forces to areas, coordinating the movement of the areas with the routing of the merchant ships, receiving threat intelligence information from all sources, and directing immediate shifts of the lane in response to intelligence as well as the gradual shifting for deception.

In convoying, the escorts can return to the port of origin either steaming unaccompanied or by escorting returning merchant ships. Generally, an escort will be less productive on its return voyage than it was in protecting a loaded merchant ship. In the protected lane, the protective unit remains in an operating area providing defense to loaded merchant ships proceeding in one direction through the lane, as well as empty ships going in the other direction. Over a long period of time the convoy escort would be less productive as it must make a return transit for every convoy escorted, while the unit providing defense in a protected lane remains on station for a longer time offering protection to any merchant ships using the lane.

There would be times when owing to the strategic or tactical situation, threat, available forces and environmental conditions, an operational commander is forced to use a particular system of shipping protection. Also, the commander may find it necessary to use combinations of the systems in sequence or concurrently. For instance, escorting convoys through a shifting defended lane might provide the required added degree of protection for special cargoes.

## Conclusions and Recommendations

The U.S. Navy has not given adequate attention to the protection of shipping during national emergencies. Procedures should be developed for coordinated protection of shipping involving surface ships, aircraft, and submarines controlled from command centers with access to the national intelligence community. These procedures should cover the various methods of shipping control and protection, such as independent sailing, convoys, and protected lanes, as well as mixes of the various methods. These methods should be utilized in war games, where subsequent analysis could develop probabilities of success and expected loss rates. Protection of shipping procedures should be included in formal Navy tactical training courses of instruction. This instruction should include characteristics and capabilities of merchant ships. Fleet exercises should be conducted using merchant ships, employing actual command, control, and communications arrangements which could be available to the same merchant ships in wartime.

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A flag officer level command should be established ashore colocated with each major area operational control authority with the responsibility for naval control of shipping and naval protection of shipping. This new command should have a command center with communications, display, computer supported decision aids, intelligence and environmental inputs. The new command should be delegated the tasks of training, developing, and carrying out the control and protection functions for the OCA. To accomplish this, the command should be given operational control of all frigates and a portion of VP aircraft, as well as periodic operational control of some submarines, destroyers, battle groups, airships, and Coast Guard resources. Liaison with Air Force, allies, SOSUS, tactical development, and research facilities should be granted.

As frigates were not intended to operate with battle groups, they should not be so employed. Frigates (FF and FFG) should form the basis of shipping protection and, under the new command, should train and develop procedures for the protection of shipping as part of a coordinated system. Money should not be spent by the Navy to make existing frigates more compatible with battle groups. Rather, those scarce funds should be applied to improving the capability of frigates to perform the shipping protection role.

Staffs from the Chief of Naval Operations through the numbered fleet commanders should have a "Naval Protection of Shipping" section with similar status as that given to battle groups.

Innovative procedures and systems should be explored and developed for protection of shipping. Building a replacement for an aging class of ship or a new sensor is not enough. Protection of shipping should be approached as a system involving all those platforms, sensors, and procedures which can provide the highest degree of protection against the projected threat for the least cost.

World War I and II procedures, with a few modifications, might offer the best opportunity for the present. Until new procedures are developed and analyzed against the projected threat, an operational commander will not know how best to protect shipping. Training in future protection of shipping procedures cannot commence until these procedures are developed, analyzed, and have been put into practice.

