Investigation Report

Formal Investigation into the Circumstances Surrounding the Downing of Iran Air Flight 655 on 3 July 1988

THE SECRETARY OF DEFENSE

WASHINGTON, THE DISTRICT OF COLUMBIA

19 August 1988

MEMORANDUM FOR SECRETARY OF THE NAVY

SUBJECT: Investigation into the Circumstances Surrounding the Downing of Iran Air Flight 655 on July 3, 1988

The proceedings, findings of fact, opinions and recommendations, as modified by the subsequent endorsers, are approved. The report and endorsements are provided for action consistent with the recommendations contained therein.

Attachment

cc: CJCS

THE SECRETARY OF DEFENSE

WASHINGTON, THE DISTRICT OF COLUMBIA

19 August 1988

MEMORANDUM FOR COMMANDER IN CHIEF, UNITED STATES CENTRAL COMMAND

SUBJECT: Investigation into the Circumstances Surrounding the Downing of Iran Air Flight 655 on July 3, 1988

The proceedings, findings of fact, opinions and recommendations, as modified by the subsequent endorsers, are approved. The administrative censure of [ ] reported in paragraph 4b of your endorsement should be withdrawn.

The report and endorsements have also been forwarded to the Secretary of the Navy for appropriate action.

Attachment

cc: CJCS

OFFICE OF THE CHAIRMAN
THE JOINT CHIEFS OF STAFF
WASHINGTON, D.C. 20301-6000

CM-1485-88
18 August 1988

SECOND ENDORSEMENT on Rear Admiral Fogarty's ltr of 28 July 1988

From: Chairman, Joint Chiefs of Staff
To: Secretary of Defense

Subj: FORMAL INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE DOWNING OF IRAN AIR FLIGHT 655 ON 3 JULY 1988 (U)

1. The downing of civilian Iran Air Flight 655 on 3 July was a tragic and regrettable accident and, as is so often the case in a combat environment, there were a number of contributing factors. It is important to put the events of that day in the local context.

2. The U.S. Government committed naval forces to the convoying of American flag tankers in the spring of 1987. From the outset, the Administration emphasized that while our forces could achieve this mission, it would involve risks and uncertainties. This prediction was borne out by several incidents, e.g., the indiscriminate laying of Iranian mines, the Bridgeton explosion, the STARK tragedy, the SAMUEL B. ROBERTS striking a mine, the capture of the Iran Ajar, Iranian firing on U.S. helos, and the incidents of April 18 when Iranian ships and aircraft attempted to damage U.S. units. Throughout this period and especially in the wake of the above events, the Government of Iran issued inflammatory statements threatening retaliation against American personnel and interests. Reinforcing the high level of tension, both Baghdad and Teheran have continued to attack unarmed merchant ships, the former with aircraft and the latter with small boats, ships and aircraft. Iranian assaults have been largely concentrated in the southern gulf and on occasion have taken place in the presence of foreign warships.

As a result of the STARK incident, our commanders were given a revised set of ROE which clarified their authority to take positive protectiv measures when hostile intent was manifested. It was emphasized that they o not have to be shot at before responding and that they have an unambiguous responsibility to protect their units and people. To facilitate these measures a Notice to Airmen was reviewed and reissued in September 1987. It advised all nations who operate aircraft in the Persian Gulf region that U.S. Navy ships were taking additional precautions. In particular the need for aircraft operating in those waters to be prepared to identify themselves on specific circuits and to state their intentions was emphasized. Additionally, they were advised that failure to respond to requests for identification, as well as operating in a threatening manner, could place aircraft at risk by U.S. defensive measures. These practices, despite some grumbling, have been generally accepted in the Gulf. Unfortunately, few commercial airlines saw fit to reroute their aircraft or to make any other significant allowances for the hostile environment. Still, it is clear that all concerned were aware that U.S. ships were deployed in the area and that those units fully intended to defend themselves when necessary.

For several months preceding the Air Bus shootdown, the U.S. had received reports of Iranian efforts to improve their ability to attack U.S. men-of-war. 1

and other types of aircraft to carry a variety of air-to-surface missiles, and to develop small boat "swarm" tactics which could break through a warship's defensive gunfire. Special occasions, such as Moslem or American holidays, inevitably precipitated intelligence reports that the Iranians were preparing a particular operation directed at Americans. In fact, we had been warned of the possibility of some type of unusual assault on the 4th of July weekend.

Of especial interest was the recent shift of Iranian F-14's from Bushehr to Bandar Abbas. In the few days preceding this incident several F-14 flights, operating from Bandar Abbas, took place in the southern Gulf. On 2 July, USS HALSEY had to warn away a potentially threatening Iranian F-14.

Upon arrival in the region every unit, including VINCENNES, was briefed on our past experience, the current ROE, and most recent intelligence. It is fair to say that incoming ships approach Gulf operations aware of the uncertain environment and with an appreciation of the need for vigilance. Similarly, they have been impressed with their responsibility to defend themselves in a forehanded manner. Those thoughts are constantly on the minds of every commander and crew serving in the Gulf.

3. The events that led up to the tragedy on 3 July were typical of the everyday patterns in the Gulf. On 2 July, Iranian gunboats in the Gulf had positioned themselves in the western approaches to the Straits of Hormuz and were challenging transiting merchantmen. MONTGOMERY was located sufficiently close to a ship attack in progress to respond to a request for distress assistance and to fire warning shots to ward off IRGC units attacking a merchant vessel.

On the morning of 3 July, MONTGOMERY observed seven IRGC small boats approaching a Pakistani vessel. The number shortly thereafter grew to 13 and they began to challenge nearby merchantmen. VINCENNES was ordered to the area to support MONTGOMERY and launched a helicopter to reconnoiter the scene. In the process the helicopter was fired upon. VINCENNES and MONTGOMERY closed the general areas of the small boats. Two of the boats turned toward VINCENNES and MONTGOMERY while the others began to maneuver erratically. These actions were interpreted as manifesting hostile intent and both ships, after being given permission, engaged. This action, involving high speed course changes and gunfire at close range, was still in progress when Air Bus 655 took off from the joint military/civilian airfield at Bandar Abbas and headed toward Dubai. It is hard to overemphasize the fact that Bandar Abbas is also a military airfield. The Air Bus was probably not informed of the surface action taking place in the Strait. Informed or not, Flight 655 logically appeared to have a direct relationship to the ongoing surface engagement.

Even this brief and simplistic description, leads to the opinion, which the investigation drew, that Iran must share the responsibility for the tragedy. Given the fact that the surface engagement was initiated by the Iranians, I believe that the actions of Iran were the proximate cause of this accident and would argue that Iran must bear the principal responsibility for the tragedy. By any measure it was unconscionable to ignore the repeated warnings of U.S. forces concerning potential hazards of flight in the Gulf. It was especially reprehensible to allow an airliner to take off from a joint "military/civilian" airfield and fly directly into the midst of a gunfight. As for the aircraft itself, its failure not to monitor the international air distress net and not to respond to challenges was significantly negligent.

4. The investigation paints in vivid terms the pressure-filled environment in the VINCENNES CIC. In assessing what was reasonable performance under the circumstances it is imperative to have an emotional and intellectual feel for that picture.

During the critical seven minutes that Flight 655 was airborne, Captain Rogers and his CIC watch team were integrating a multitude of ongoing events. Specifically, VINCENNES was engaged in a high-speed surface battle with at least two groups of Iranian small boats--all of which had the capability to inflict serious personnel and equipment damage on VINCENNES and MONTGOMERY. Any one of these could have been a terrorist platform prepared to make a suicide run against either ship. At the same time, she was monitoring one of her helos which was airborne and had already come under attack from the Iranian small boats. CIC was also tracking an Iranian P-3 military aircraft airborne approximately 60 nautical miles to the northwest which was presenting a classic targeting profile. (i.e., furnishing information to an attack aircraft.) Captain Rogers was given and assumed tactical command of the MONTGOMERY and SIDES. He was also prepared to assume tactical command of U.S. combat aircraft ordered in and approaching the scene from outside the Persian Gulf. Additionally, VINCENNES was dealing with a fouled gun mount and maneuvering extensively to keep her remaining gun unmasked to engage the multiple target threat. At one point she was forced to make a full rudder turn at 30 knots which caused the ship to heel sharply and added to the drama.

In the midst of this highly charged environment, an unknown aircraft took off from a joint military/civilian airport on a flight path headed directly toward VINCENNES and MONTGOMERY. This was the same airfield from which Iran had launched F-4's in support of an attack on U.S. naval forces on 18 April and from which Iran had repeatedly launched F-14 fighter aircraft during the prior week. This unknown aircraft was 27 minutes behind any scheduled commercial airline departure from Bandar Abbas airport. Although it was flying within a known commercial air corridor, it was off the centerline some 3 or 4 miles, which was not the usual centerline profile for commercial air traffic previously monitored by VINCENNES. Moreover, its mid-range altitude was consistent with either a hostile or commercial aircraft.

VINCENNES could detect no radar emanations from the contact which might identify it, but was reading a Mode II IFF squawk. This situation

was confused somewhat when a Mode II IFF squawk was detected and the aircraft was identified as an F-14. Complicating the picture was an Iranian P-3 to the west which was in excellent position to furnish targeting information to an attacking aircraft. More importantly, the unknown contact continued at a gradually increasing speed on a course headed toward VINCENNES and MONTGOMERY. It failed to respond to repeated challenges from VINCENNES over both the military and international emergency distress frequencies. The Captain was in a genuine dilemma. On one hand the threatening contact was closing about 5-6 miles a minute. On the other, he had to act quickly to defend his ship and crew before the contact got much closer than 10 miles (in order to give himself fire depth and to stay outside of [ ] range). By the time he learned of the potential threat, his decision time was less than 5 minutes.

It is under these circumstances, coupled with the significant background of recent history in the Gulf, as well as the influence of current intelligence reports, that the decision of Captain Rogers to fire must be judged. Given what was in his mind at the time, there was no other prudent or responsible course.

5. That is not to say that everything went right. There are no "flawless" operations in combat--even when there is a successful outcome. But to say that there were mistakes made, says very little by itself.

Some of the information given to Captain Rogers during the engagement proved not to be accurate. Unfortunately the investigation was not able in every case to reconcile the inaccuracies. However, the more serious question to be posed here is whether these errors were significant or critical to the result.

a. Shortly after liftoff Flight 655 was identified within VINCENNES as an F-14. The Identification Designation Supervisor [ ] had detected a Mode II squawk on his RCI and announced the contact was an F-14. The initial "unidentified assumed hostile" designation was changed to F-14. Although one officer suggested the possibility of COMAIR (commercial aircraft), no one else in the CIC took issue with the F-14 classification. The fact is the sensors gave no clear piece of information that it was not an F-14. However, if the F-14 identification had never been made, the contact would have remained designated "unidentified assumed hostile." In that event, it is unlikely that the CIC Team would have proceeded any differently or elicited additional information in the extraordinarily short time available. As long as it remained a possible "hostile," the Commanding Officer would be obligated to treat it in the same manner as he would an F-14.

b. At least one (possibly two) interrogation from the Remote Control Indicator registered a Mode II 1100 IFF squawk. This probably inspired the F-14 classification since the ship had intelligence that Iranian F-14's were employing Mode II code 1100. The Air Bus, however, was not squawking Mode II. When initially interrogating the target on the RCI, the IDS laid the IFF range gate on the Bandar Abbas area. Given the ducting that day, there is a possibility that the system detected the Mode II squawk of another aircraft. Because the range gate does not move with

the hooked target automatically, in order to continue interrogating Flight 655 the range gate had to be changed manually to track with the contact.

Was it a critical error? No. Even if the Commanding Officer had been informed that there was no Mode II indication, that information alone has little significance. An attacker could easily be either squawking Mode III or no mode if he believes it will camouflage his identity. On 18 April, Iranian F-4s that were threatening U.S. units did not squawk any mode throughout that day. Combined with other pieces of information, a Mode II indication may help a Commanding Officer confirm or disaffirm a conclusion, but when under threat it is not definitive but only one piece in the puzzle.

c. The Commanding Officer did not put emphasis on the air corridor being 20 miles wide. In fact, his experience in the Gulf suggested that commercial aircraft normally tried hard to stay directly on the center line. He believed that 3 to 4 miles off the center axis was unusual and should be considered. In actual fact, however, it is again a peripheral point. An attacker would probably prefer to be in an air corridor if it confused his target. The Persian Gulf is blanketed by air corridors; they cover over 50% of the Gulf. Being in an air corridor is secondary information at best and must be combined with altitude, voice transmissions, etc., to be conclusive.

d. By far the most puzzling mistake to me was the ultimate misreading of altitude. The investigation established that the range and altitude information passed to the Commanding Officer was correct until the contact reached approximately 15NM. The time was 0653:45Z. Shortly thereafter, at a range between 15 and 12 miles, the Tactical Information Coordinator (TIC) reported that the altitude (which he estimated had previously reached 11,000 feet) was decreasing. At that moment, the Commanding Officer was rapidly reaching a point of no return with his Standard missiles and was inside the potential Iranian air-to-surface missile threat envelope. The TIC testified that he reported declining altitude at 11 miles, possibly 10 miles, and at nine miles. The last report was given as the missiles went off the rail and played no part in the process--the firing order had been given a few seconds earlier at 0654:05Z. Actually, the investigation concluded that the time from the first report of decreasing altitude to the decision to fire was in the neighborhood of 20 to 30 seconds.

The investigation was unsuccessful in satisfactorily reconciling the conclusion that the contact was descending with subsequent data analysis. The TIC's belief, however, was supported by three other watchstanders, although it is not clear that they had arrived at that conclusion independently.

It is impossible to say with assurance how the decreasing altitude information bore on the Commanding Officer's final decision. Obviously, whether the aircraft was ascending or descending could, when taken in the overall context, be a "significant indicator." It should be borne in mind, however, that an aircraft even at a range of 9 miles and altitude of 13,000+ feet (actual altitude at time of firing) was at sufficiently low

altitude that it could attack VINCENNES within the next 9 miles. On the other hand, the report that the altitude was decreasing could possibly have further confirmed a developing decision to fire. The Commanding Officer testified that it was only one piece of information among many. In this reviewing officer's opinion, it is unlikely that this one piece of information would have settled the issue one way or another given the uncertainties that remained and the extremely short time left.

The above errors aside, one is driven back to fundamentals. The villains of the piece were 6 significant problems which plagued the Commanding Officer and he could not control or discount:

- VINCENNES was engaged on the surface against Iranian boats.
- The "unidentified assumed hostile" contact had taken off from a military airfield.
- The contact was heading directly at VINCENNES and its range was relentlessly closing.
- The unknown aircraft radiated no definitive electronic emissions.
- VINCENNES warnings went unanswered.
- The compression of time gave him an extremely short decision window.
- Captain Rogers had every right to suspect that the contact was related to his engagement with the IRGC boats--until proved otherwise. The proof never came.

Given the time available, the Commanding Officer could hardly meet his obligation to protect his ship and crew and also clear up all of the possible ambiguities. It is not unusual in combat to have to deal with uncertainties and conflicting information. Although it might not seem fair, commanding officers do not have the luxury of reconciling all such questions before committing themselves. They have to go with the weight of evidence. These are the realities of combat and the commanding officer, if he is to function effectively, must be given some latitude to deal with them.

6. The investigation also examined the training and watch organization of VINCENNES. Given the conditions existing on 3 July, Captain Rogers and his senior CIC watch personnel acted reasonably. That these officers relied on information from their combat team is not only reasonable--but is an absolute necessity in a pressure-packed environment. Watch teams train as a unit and function as a unit, not as separate individuals. It is impossible in the heat of battle to double check every piece of data being reported. The Commanding Officer and his senior watchstanders must rely on their subordinates. This is not to suggest that VINCENNES personnel performed perfectly in this incident; they did not. As the investigation makes clear, to say there were errors made and lessons learned is not

necessarily to suggest culpability.

There were, of course, a number of areas of VINCENNES CIC performance that deserve some attention. The investigation examined the ship's training and battle organization. It went on to recommend that the AAWC position in the CIC organization be strengthened and that the "GW" not be given responsibility as a radio telephone talker. In my view, when operating in an environment that includes commercial airlines the process of "target designation" should be formalized. Also circuit discipline becomes extremely important and VINCENNES should work to improve in this area. Clearly, the GW or AAWC should confirm or disaffirm important reports (such as descending altitude)--particularly ones that change conditions just as the Captain is approaching the firing point. The Commanding Officer and the administrative chain of command should review the investigation with these points in mind with the intention of translating this tragic incident into meaningful corrective actions.

7. It is my view that, understanding the ertire context, reasonable minds will conclude that the Commanding Officer did what his nation expected of him in the defense of his ship and crew. This regrettable accident, a by-product of the Iran-Iraq war, was not the result of culpable conduct onboard VINCENNES.

8. A special word should be said about the administrative censure awarded [redacted] by CINCENT. My own review of his performance is that, for the foregoing reasons, it did not constitute culpability. Moreover, the rationale behind a non-punitive letter is to point out lessons to be learned and ways to improve an officer's future performance. It is intended to be a private letter, not part of the officer's record, and not to influence an officer's career prospects. Due to the unusual public attention directed to this event, I believe that a non-punitive letter can haruly be issued and meet the spirit in which such a censure is intended. Therefore, I recommend that the administrative censure [redacted] reported in paragraph 4b of the first endorsement be disapproved.

9. As to the AEGIS system itself, it performed as designed and subsequent analysis indicated that the sensor data collected was accurate. This was one of our first experiences with the AEGIS under battle conditions and the Investigating Officer made a few suggestions as to refinements to be explored.

It should be appreciated that AEGIS was never advertised as being capable of identifying the type of aircraft being tracked. That decision is still a matter for human judgment; despite AEGIS' considerable capabilities. AECIS' major advantages are the extended range of its sensors, its fast reaction time, the capacity to track many targets at once, its ability to send this information automatically to other units, and its data displays which combine sensor information with other inputs and better convey it to the users. Because of its long range radar it gives operators additional time to react, to gather data, and to make considered judgments. Operating close-in to a land-based airfield, however, these advantages can be severely eroded. That problem is not the

fault of the system but geography. While the machine (in this event, AEGIS could not lengthen the Captain's decision time) cannot alter distance, there are perhaps some refinements that can make the SPY1 more effective in the close-in environment. Admiral Fogarty has recommended some improvements which I would support. I would add that a means for displaying altitude information on a contact such as "ascending" or "descending" on the LSD should likewise be examined.

But beyond these specific fixes, I recommend that some additional human engineering be done on the display systems of AEGIS. The objective would be to better equip it for assisting with rapid decisions in a situation such as VINCENNES confronted. Secretary Carlucci and I visited the AEGIS mock-up at Wallop's Island for a briefing on AEGIS and a partial reconstruction of the Flight 655 shootdown. It seemed to our inexperienced eyes that the Commanding Officer should have some way of separating crucial information from other data. Moreover, the vital data should be displayed in some fashion on the LSD so the Commanding Officer and his main assistants do not have to shift their attention back and forth between displays.

10. Although the policy decision to utilize an AEGIS cruiser in the Strait of Hormuz and Persian Gulf was not a focus of the investigation, I believe that a few comments on that policy are in order. Probably the most serious and destructive potential threat to both military and civilian shipping in the area is the Silkworm missile. There are other serious threats, of course, but they all require overt actions on the part of a belligerent's forces in international airspace or waters and are more subject to countermeasures. A Silkworm missile, once it has been properly sited and equipped, can be launched on a few minutes notice from the belligerent's landmass. Its flight time is a matter of seconds and it possesses an imposing destructive charge. It is an awesome weapon. The most capable platform in the U.S. inventory for handling this threat is the AEGIS cruiser. It makes the greatest sense to me to utilize the best available platform against the gravest threat. Accordingly, I strongly endorse the deployment of an AEGIS cruiser to the region as long as the Iranian Silkworm missile is considered a likely threat.

11. I recommend the Secretary of Defense refer this investigation to the Chief of Naval Operations for follow-on actions consistent with the Investigating Officer's recommendations as modified.

12. Subject to the foregoing, the proceedings, findings of fact, opinions and recommendations of the Investigating Officer, as modified by the previous endorsement, are approved.

WILLIAM J. CROWE, JR.
Chairman
Joint Chiefs of Staff

5 August 1988

FIRST ENDORSEMENT on Rear Admiral Fogarty's ltr of 28 July 1988

From: Commander in Chief, United States Central Command
To: Secretary of Defense
Via: Chairman, Joint Chiefs of Staff

Subj: FORMAL INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE DOWNING OF IRAN AIR FLIGHT 655 ON 3 JULY 1988

1. Readdressed and forwarded.

2. The proceedings of the investigation and findings of fact are approved. The opinions and recommendations are approved except as noted below.

a. Opinions. Opinion E.1: Approved with the qualification that [ ], the Identification Supervisor (IDS) identified the aircraft as "mode II-1100, breaks as F-14," and the aircraft was entered into the system as an F-14, thus forming a positive, authoritative identification.

Rationale: [ ] IDS confirmed [ ] identification.

b. Recommendations:

(1) Recommendation A.2: Approved with the additional suggestion that the Chief of Naval Operations consider instituting a program for Command, Control, Communication and Intelligence (C3I) stress management to test and evaluate the impact of human stress on C3I operations in complex modern warships such as the AEGIS Cruiser. Integral to this program would be the incorporation of measures of human effectiveness into battle simulation techniques to assess the effect of peak overloads and stress on the human players.

Rationale: High level of responsibility and stress associated with these sophisticated ships require assigned personnel possess the highest personal suitability.

(2) Recommendation A.3: Disapproved.

Rationale: Appropriate matters contained in the proposed demarche are being handled through ICAO channels.

(3) Recommendation A.6: Disapproved.

Rationale: The revised warning as promulgated by CJTFME is adequate.

3. The following additional opinions concerning the more contentious issues in the investigation are offered in order to provide a sharper focus and my thinking on these issues.

a. A major consideration in reviewing the report is the time compression within which the actions described in the investigation took place. Only seven minutes and five seconds elapsed from the time Iran Air Flight 655 was first detected by USS VINCENNES and the decision made to fire the missiles. The Captain of the USS VINCENNES was made aware of a possible incoming threat aircraft some four minutes before the decision to fire. Captain Rogers' actual decision window was confined to less than one minute when the suspect aircraft was approaching to within ten miles of the ship.

b. The report substantiates that a Mode II-1100 Identification Friend or Foe (IFF) signal was reeived on USS VINCENNES trhough the Remote Control Indicator (RCI). This signal was received only once in the first minutes of the Iran 655 flight and never received again. It was not picked up by the ship's SPY-1 Radar System. While the source of this signal cannot be verified, the possibility of emanation through the "ducting" phenomenon from a military aircraft on the ground at Bandar Abbas appears to be plausible.

c. Although the initial identification of the incoming aircraft as an F-14 is in question, it was clearly identified by the IDS operator [ ] as "Mode II-1100, breaks as F-14." From that moment on, the Anti-Air Warfare Coordinator's (AAWC) organization, most especially the Tactical Information Coordinator (TIC), [ ], and the Golf Whiskey (Force Anti-Air Warfare Coordinator) [ ] were convinced the incoming aircraft was an F-14, despite the fact that the Mode II IFF signal did not reappear and the ship's SPY-1 Radar System only held Mode III 676C.

d. The matter of ascending and descending altitude of Flight 655 deserves special attention as there is a direct contradiction between the data tapes obtained from USS VINCENNES and the situation report submitted by USS VINCENNES to the Commander, Joint Task Force Middle East (JTFME) following the engagement.

(1) The primary source for the reports that the aircraft of interest was rapidly decreasing in altitude, at 1,000 feet per mile, and increasing speed on a course directly toward USS VINCENNES was the TIC [ ]. He apparently interjected these reports on the ship's Command Communication Circuit 15 every time he had the opportunity "to make sure they were

staying informed and ... [ ] getting too sidetracked by the surface engagement where they were forgetting about the guy coming in." This assessment [ ] cannot be logically explained in that his battle station's character read out (CRO) would have been showing an exact opposite profile of steadily increasing altitude. Clearly, [ ] could not have been reporting from the data displayed on the CRO. The most reasonable explanation is contained in the report by [ ], MC, USN and [ ], MSC, USN that his behavior was induced by a combination of physiological fatigue, combat operations, stress and tension which can adversely affect performance and mission execution. As [ ] states, "The concept of 'scenario fulfillment' could seem as applying in this case." Since the TIC has no doubt that the aircraft is an Iranian F-14, heading toward the ship, and is not acknowledging repeated warnings, "the mind may reject incongruent data and facilitate misperception which promote internal consistency." His mental agitation is reflected in his testimony that he took it upon himself to take "every open shot" he was getting on Circuit 15 to ensure "everyone up in the command decision area was informed, kept aware of what was going on in case they got sidetracked on other events." Toward the end it is reported he was yelling out loud.

(2) [ ] the principal Anti-Air Warfare (AAW) advisor to the Commanding Officer, apparently accepted the TIC's reports of descending altitude and increasing speed at face value without further evaluation on his part from the CRO at his position and, passed the assessment on to the Captain, which in turn had a direct bearing on the decision to fire. The AAW states he "came to the realization that date to me doesn't mean anything, because I reacted to people that I thought that ... I knew that I had operated with that were reliable ... and when they reported at short range they had a decreasing altitude, increasing speed, I had no reason to doubt them."

e. As to the Commanding Officer's conduct, I support the investigation officer's opinion that Captain Rogers made the correct decision to fire given the facts which he had available to him and the short time to make the decision.

(1) Captain Rogers had temporarily changed his ship's battle doctrine for the Persian Gulf by directing his best officer in AAW to sit in the "Golf Whiskey" (or Forces Anti-Air Warfare) position to the left of him in the Command and Decision area. He relied on this officer, [ ] to maintain and direct the anti-air warfare picture, provide him with funneled information from the AAWC and, make recommendations upon which the Captain could make a decision as to employment of the ship's weapons systems. Captain Rogers had the highest confidence in the ability of the AAWC, backed up by the facts that the AAWC had served aboard USS VINCENNES for five years, was a fully qualified AAWC, and had participated in training and execution exercises under the "Golf Whiskey" organization.

Captain Rogers exercise of "command by negation" placed an even greater reliance on the information and recommendations received from the AAWC, as he did not as a practice deal with his CRO relying rather on the information from operators who, as he states, were trained better than he to read a CRO.

(2) The first information given to Captain Rogers by the AAW was that there was an inbound F-14 on a closing course which was not responding to challenges. He apparently was also told that the aircraft had veered from its route and appeared to be moving to an attack position. Such a scenario would not have seemed unreasonable to the Captain as he was well aware of the F-14 activity from Bandar Abbas, warning of possible Iranian attack over the holiday weekend, threat of suicide aircraft and other background which is well described in the report. Based on the information he had received from the AAW, Captain Rogers came to the initial conclusion that the aircraft was displaying hostile intent and requested permission to engage at 20 miles if the air threat did not respond to warnings. Despite the request from his AAW to engage at 20 miles, Captain Rogers elected to hold off based on a lack of Electronic Warfare (EW) coorelation.

(3) During the three minutes remaining before the decision was made to fire, Captain Rogers was preoccupied with the ongoing small boat engagement and a foul bore in Mount 51. He believed the most immediate threat to the ship was the difficulty of USS VINCENNES to deal with dense, aggressive high speed small craft attempting to press home an attack. His primay focus, Large Screen Display (LSD) and hook were on and remained on the small craft engagement. Thus, he continued to rely upon the verbal assessments from the AAW as to the extent and nature of the air threat.

(4) As the aircraft entered the 10 mile range from USS VINCENNES, the Captain was forced to make a decision. He had been told that: The aircraft is not responding to warnings; not acting like a commercial aircraft; the IFF mode and code were indicative of an Iranian military aircraft; and, most importantly, that the aircraft was decreasing in altitude, increasing in speed and on a closed flight profile with USS VINCENNES. As Captain Rogers says in his testimony, "... my confidence in [ ] confirmed to me that the aircraft was, in fact a threat." With these assessments and the aircraft now at nine miles from USS VINCENNES, the Captain believed he could no longer delay in defending his ship and made the decision to engage - a decision which had to be made in a minute or less.

(5) One might criticize the Captain for not devoting more attention to the air picture, but this is judgemental. Captain Rogers believed the most immediate threat to his ship was

the small boats and he could count on the advice of the AAW to keep him informed, and should the circumstance arise the AAW capabilities of USS VINCENNES were such that he could execute a timely and successful engagement.

(6) In hindsight it appears that the replacement of [ ] as the AAWC with [ ], an inexperienced officer, qualified only through on the job training, contributed to a degradation of the AAWC organization under combat stress. This in effect denied a double check on the information being provided from the ship's "Air Alley." Based on previous training and drills, however, Captain Rogers could not have reasonably foreseen this a consequence of a sound tactical decision to modify his ship's battle doctrine for operations in the Persian Gulf.

f. The performance of the AAW leaves room for question. He was the one officer upon whom Captain Rogers had placed his trust and confidence to evaluate the AAWC situation and provide accurate assessments and recommendations upon which to base an engagement decision.

(1) Early on the AAW appears to have arrived at the conclusion that TN 4131 was an F-14 and posed a hostile threat to his ship. He accepted without question the combined reports of the TIC [ ], and the IDS [ ] as confirming an F-14. He admits his judgement was influenced by the July 4th intelligence warning, recent F-14 deployment to Bandar Abbas, previous observations of an Iranian F-14 squaking Mode II-1100, the Iranian P-3 to the northwest as a possible targeting platform, and the ongoing surface engagement.

(2) In the final minute and forty seconds, the AAW tells his Captain, as a fact, that the aircraft has veered from the flight path into an attack profile, and is rapidly descending at increasing speed directly toward USS VINCENNES. Even though the tone of these reports must have seemed increasingly hysterical (yelling and shouting), the AAW made no attempt to confirm the reports on his own. Quick reference to the CRO on the console directly in front of him would have immediately shown increasing not decreasing altitude. Rather, this experienced and highly qualified officer, despite all of his training, relied on the judgement of one or two second class petty officers, buttressed by his own preconceived perception of the threat, and make an erroneous assessment to his Commanding Officer. As he said, "I had no reason to doubt them. I had to make a split second recommendation to the Commanding Officer, and I did." While many factors played in Captain Rogers' final decision to engage, the last report by the AAW that the aircraft was rapidly descending directly toward the ship may have been pivotal.

4. The following actions by USCINCCENT apply to this investigation:

a.[ ]

b. I am issuing a non-punitive letter of censure to the AAW for his failure to take timely and effective action to ensure that the information he was communicating to his Commanding Officer was accurate.

GEORGE B. CRIST
General, USMC
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1320
28 Jul 88

From: Rear Admiral William M. Fogarty, USN
To: Commander in Chief, U.S. Central Command

Subj: FORMAL INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE DOWNING OF A COMMERCIAL AIRLINER BY THE USS VINCENNES (CG 49) ON 3 JULY 1988 (U)

Ref: (a) JAG Manual

1. As directed by Commander in Chief, U.S. Central Command, and in accordance with reference (a), a formal investigation was convened on 3 July 1988. The original record of hearings and additional documents are forwarded.

2. The Investigating Officer, after inquiring in to all facts and circumstances connected with the incident which occasioned the investigation, and having considered the evidence, submits the following preliminary statement, executive summary, findings of fact, opinions and recommendations:

I. PRELIMINARY STATEMENT

1. By order of General George B. Crist, USMC, Commander in Chief, U.S. Central Command, dated 3 July 1988, Rear Admiral William M. Fogarty, USN, Director, Policy and Plans (J-5), U.S. Central Command, was appointed to conduct a formal investigation into the circumstances surrounding the downing of a commercial airliner by the USS VINCENNES on 3 July 1988.

2. The formal investigation was conducted at the Administrative Support Unit, Bahrain, with preliminary interviews and information gathering conducted by the investigating team on board USS VINCENNES (CG 49), USS ELMER MONTGOMERY (FF 1082), USS SIDES (FFG 14), and USS CORONADO (AGF 11), flagship for Commander, Joint Task Force Middle East (CJTFME).

3. Rear Admiral Fogarty, and an investigating team composed of five officers, arrived in Bahrain on the evening of 5 July 1988. Preliminary interviews began on board participating units on 6 July 1988. Two additional investigating team members arrived 9/10 July 1988, one by way of Commander, Seventh Fleet, where he gathered information on the USS VINCENNES pre-deployment training. CJTFME, RADM A. A. LESS, USN; USS VINCENNES Commanding Officer, CAPT W. Rogers, USN; USS VINCENNES Force Anti-Air Warfare Coordinator (FAAWC), and USS VINCENNES Tactical Action Officer (TAO), were designated as parties to the investigation. Formal hearings began on 13 July 1988 and closed on the afternoon of 19 July 1988.

4. The investigation inquired into all the events which occurred prior to, during, and immediately following the engagement of Track Number (TN) 4131, later identified as Iran Air Flight 655. This designation of TN 4131 is used interchangeably with Iran Air Flight 655 throughout the investigation. There were specific, technically complex issues that required the Investigating Officer to call upon the professional expertise of the Commander, Naval Surface Warfare Center (NSWC), Dahlgren, and NAVSEA (PMS-400) personnel. The USS VINCENNES data recording tapes were hand delivered under chain-of-custody immediately following the incident to NWSC Dahlgren. After initial data reduction in the United States, technical representatives from NWSC Dahlgren, led by Head, AEGIS Program Office, and NAVSEA (PMS-400), representatives came to Bahrain and provided further analysis on the following matters:

a. AEGIS Weapon System Mark 7 performance and operation;
b. Performance and operation of the AN/SPY-1A radar;
c. Operation and message content in Link 11;
d. UPX-29 IFF operations;
e. Reconstruction of Command and Decision (C&D) console operator actions;
f. Comparison of tape data analysis with statements by operators;
g. C&D doctrine enabled and entered;
h. Internal voice configuration and capability; and,
i. Environmental effects on system performance.

5. As the investigation progressed, the statements and testimony of the witnesses were integrated into the timeline extracted from the data reduction, to form a chronology of the engagement. That chronology is attached to the hearing. Timelines became essential elements of the investigation, particularly as regards the short time period (minutes and seconds) in which the Commanding Officer was required to make his decision to fire. This time period is referred to as the "critical time period" throughout the report.

6. Because of a divergence between the recorded data on the USS VINCENNES's tapes and the recollection of the witnesses concerning what they saw and when they reported what they saw, a USN Medical Corps Team consisting of a psychiatrist and a physiologist were requested by the Senior Investigating Officer to come to Bahrain. They arrived in Bahrain after the formal hearing closed. They were requested to determine whether the dynamics of the situation which confronted the crew of the USS VINCENNES impacted on their ability to perceive and relay the data which was available to them.

7. Certain items relevant to the investigation were not available to the Senior Investigating Officer. These items were primarily those which Iran could best provide (black box, recovery of wreckage, manifest, list of deceased, etc.). Requests for assistance through diplomatic channels were submitted via Commander in Chief, U.S. Central Command, to obtain

this information for inclusion in the report of investigation as appropriate.

8. Enclosures contain information relevant to the investigation, but were obtained or prepared after the adjournment of the investigation hearing.

9. Certain intelligence statements were prepared utilizing documents or sources classified higher than SECRET/NOFORN Dissemination. References to those documents are contained in [ ].

10. All times listed in the findings of fact and opinions are "Z" time.

11. During the investigation, the importance of the information being presented by way of the USS VINCENNES Large Screen Displays (LSD) became apparent. Therefore, an explanation of that system's capabilities and limitations is provided here for the benefit of the reviewer.

The AEGIS Large Screen Display (LSD) is a part of the AEGIS Display System (ADS) and is a primary visual information source for the CO, TAO and Force Warfare Commanders. It consists of four 42" x 42" flat, vertically mounted, 2-dimensional displays which display the tactical picture contained in the C&D computers. This information is displayed as Navy Tactical Display System (NTDS) symbology with appropriate velocity leaders. The range scales can be varied from [ ] nautical miles. Geographic outline maps as well as operator selectable line segments, points, circles and ellipses can also be displayed. These latter items can be used to construct operational areas, geographic features, range rings, air lanes, etc. The display operator can also attach a 24 character alphanumeric label (or "tag") to any track or point. Therefore, the track classification, ID, position relative other tracks, range, bearing, course and speeds as well as position relative to geographic features or air lanes, etc., can be displayed. However, it is important to note, that altitude cannot be displayed on the LSD in real-time.

12. TN 4133, which lifted off from Bandar Abbas shortly after TN 4131, is used as the identifier for an Iranian [ ].

13. A glossary of abbreviations used throughout the report has been compiled and is attached at the end of the transcript of the proceedings.

14. The Report of Investigation is formatted to give the reviewer a general overview of the events surrounding the incident in the Executive Summary. The Findings of Fact are arranged with background on the intelligence and operational picture in the Persian Gulf to provide the reviewer with essentially the same data which was available to CJTFME and the

USS VINCENNES on 3 July 1988. Environmental factors, commercial air information, data on Iran Air Flight 655, and relevant portions of the Peacetime Rules of Engagement (ROE) are then treated as discrete blocks of information before addressing the USS VINCENNES training and readiness, watch organization, overall combat system status, communications, and combat systems doctrine. With the foundation thus laid, the actual events of 3 July 1988 which led to the downing of TN 4131 are examined beginning with the surface engagement which formed an integral part of the decision process of the Commanding Officer, USS VINCENNES. The USS VINCENNES data recordings have enabled the investigation to break the critical time period, which comprised the air engagement, into a minutes and seconds sequence of specific actions as they occurred along a timeline. Finally, post-incident search and rescue efforts, and after action reports are addressed. Opinions and Recommendations conclude this report.

II. EXECUTIVE SUMMARY

A. INTRODUCTION.

1. On 3 July 1988, the USS VINCENNES (CG 49), operating in the Southern Persian Gulf as a unit assigned to Commander, Joint Task Force Middle East, downed a civilian airliner, Iran Air Flight 655 on a routine scheduled flight from Bandar Abbas to Dubai, with two SM-2 missiles.

2. The material condition, combat systems, training and personnel readiness of the ship were satisfactory.

3. The following narrative summarizes the events leading up to and including the downing of Iran Air Flight 655. It is in the form of a chronology because the situation leading up to, just prior to, and during the few critical minutes from Iran Air Flight 655 takeoff to downing are considered important to a full understanding of the incident. All times in the report are "Z" time.

B. PRE - 3 JULY SCENARIO.

1. In the three day period prior to the incident, there was heightened air and naval activity in the Persian Gulf. Iraq conducted air strikes against Iranian oil facilities and shipping 30 June through 2 July 1988. Iranian response was to step up ship attacks. Additionally, Iran deployed F-14's from Bushehr to Bandar Abbas. U.S. Forces in the Persian Gulf were alerted to the probability of significant Iranian military activity resulting from Iranian retaliation for recent Iraqi military successes. That period covered the fourth of July holiday weekend.

2. During the afternoon and evening hours of 2 July 1988

and continuing into the morning of 3 July 1988, Iranian Revolutionary Guard Corps (IRGC) armed small boats (Boghammers, and Boston Whalers) positioned themselves at the western approach to the Strait of Hormuz (SOH). From this position, they were challenging merchant vessels, which has been a precursor to merchant ship attacks. On 2 July 1988, USS ELMER MONTGOMERY was located sufficiently close to a ship attack in progress as to respond to a request for distress assistance and to fire warning shots to ward off IRGC small boats attacking a merchant vessel.

C. 3 JULY SURFACE ENGAGEMENT

1. On the morning of 3 July 1988, USS ELMER MONTGOMERY was on patrol in the northern portion of the Strait of Hormuz. At approximately 0330Z, USS MONTGOMERY observed seven small Iranian gunboats approaching a Pakistani merchant vessel. The small boats were reported by USS MONTGOMERY to have manned machine gun mounts and rocket launchers.

Shortly thereafter, USS MONTGOMERY observed a total of 13 Iranian gun boats breaking up into three groups. Each group contained 3 to 4 gun boats with one group of four gun boats taking position off USS MONTGOMERY's port quarter. At 0411Z, USS MONTGOMERY heard the gun boats over bridge to bridge challenging merchant ships in the area. USS MONTGOMERY then heard 5 to 7 explosions coming from the north. At 0412Z, "Golf Sierra" directed USS VINCENNES to proceed north to the vicinity of USS MONTGOMERY and investigate USS MONTGOMERY's report of small boats preparing to attack a merchant ship. USS VINCENNES's helo (OCEAN LORD 25/ Lamps MK-III helo) on routine morning patrol, was vectored north to observe the Iranian small boat activity. USS VINCENNES was also monitoring a routine maritime patrol of an Iranian P-3 operating to the west. At approximately 0615Z, the USS VINCENNES's helicopter was fired upon by one of the small boats. USS VINCENNES then took tactical command of USS MONTGOMERY and both ships proceeded to close the position of the helicopter and the small boats at high speed. As USS VINCENNES and USS MONTGOMERY approached the position of the small boats, two of them were observed to turn towards USS VINCENNES and USS MONTGOMERY. The closing action was interpreted as a demonstration of hostile intent. USS VINCENNES then requested and was given permission by CJTFME to engage the small boats with gunfire. At approximately 0643Z, USS VINCENNES opened fire and was actively involved in the surface engagement from the time Iranian Air Flight 655 took off from Bandar Abbas through the downing of Iran Air Flight 655.

2. During the course of the gun engagement of the Iranian small boats, the USS VINCENNES, at approximately 0654Z, had maneuvered into a position one mile west of the centerline of civilian airway Amber 59. The USS SIDES, transiting from east to west through the SOH, was approximately 18 miles to the east and became involved in the evolving tactical situation.

D. BANDAR ABBAS/IRAN AIR FLIGHT 655/AIR ENGAGEMENT

1. On 3 July 1988, at approximately 0647Z, an Iran Air Airbus 300, Iran Air Flight 655, took off from the Bandar Abbas joint military/ civilian airport destined for Dubai airport. The flight was a routine scheduled, international flight via commercial airway Amber 59.

2. [ ]

3. An Iranian [ ] took off approximately 7 minutes after Iran Air Flight 655, and a number of Iranian F-4s were observed to be operating in the area of Bandar Abbas approximately 30 minutes after the incident.

4. Iran Air Flight 655 took off on runway 21 (heading 210 degrees true), was directed by the Bandar Abbas Tower to squawk IFF mode III code 6760, and began a normal climb out to assigned altitude of 14,000 feet for the flight, which lasted a total of 7 minutes before the plane was hit by the missiles from USS VINCENNES. The pilot remained within the Amber 59 air corridor (20 miles wide, 10 miles each side of centerline), made a routine position report to Bandar Abbas departure control at approximately 0654Z, and was ascending through 12,000 feet at a speed of approximately 380 kts at the time of making his report.

5. At approximately 0654Z, the missiles fired from USS VINCENNES impacted the aircraft at an altitude of 13,500 feet, approximately 8 miles from USS VINCENNES, with Iran Air Flight 655 still in its assigned air corridor. Debris from the aircraft and a significant number of bodies were found 6.5 miles east of Hengham Island at 26-37.75'N/56-01'E. While no passenger manifest nor list of deceased has been released by Iran, various sources have established that some 290 persons from six nations, were on board Iran Air Flight 655.

6. VINCENNES - - CRITICAL DECISION WINDOW

(a) At approximately 0647Z - Iran Air Flight 655 was detected by the USS VINCENNES's AN/SPY-1A radar bearing 025 degrees, 47NM, and was assigned TN 4131. At approximately 0648Z, USS SIDES detected Iran Air Flight 655, bearing approximately 355 degrees, range approximately 32 miles. The aircraft continued to close USS VINCENNES with a constant bearing, decreasing range. At approximately 0649Z, USS VINCENNES issued warnings on Military Air Distress (MAD) (243.0mhz) and at 0650Z began warnings on International Air Distress (IAD) (121.5mhz) to TN 4131 located 025 degrees, 40NM from USS VINCENNES.

(b) At approximately 0650Z - Several USS VINCENNES CIC personnel heard, on internal Combat Information Center (CIC) voice circuits, a report of F-14 activity. A momentary

Mode II-II00 IFF indication was detected which was correlated with an Iranian F-14. This was reported throughout CIC over internal CIC voice circuits. Continuous MAD and IAD warnings were ordered at 30NM (5 total warnings on MAD and 4 total warnings on IAD). USS VINCENNES continued the surface engagement and experienced a foul bore in Mount 51. In order to unmask the after gun mount, full rudder (at 30 knots) was applied. This added to the increasing tension in CIC.

(c) At approximately 0651Z - As TN 4131 closed to 28NM, USS VINCENNES informed CJTFME that she had a closing Iranian F-14 which she intended to engage at 20 NM unless it turned away. USS VINCENNES requested concurrence. CJTFME concurred but told USS VINCENNES to warn the aircraft before firing. Warnings continued, but no response from TN 4131 was received, nor did it turn away.

(d) At approximately 0652Z - Warnings continued over both IAD and MAD. Still no response. Although TN 4131 reached the 20 NM point, the CO decided not to engage. The order was given to illuminate the contact with fire control radar. There were no ESM indications. TN 4131 was ascending through 10,000 feet.

(e) At approximately 0653Z - At 15-16NM, the last warning over IAD was given by USS SIDES to the aircraft bearing 204 degrees to USS VINCENNES, range 15.5 miles. During the last 30 seconds of this minute, the CO made his decision to engage TN 4131.

(f) At approximately 06:54, the CO turned the firing key. Two SM-2 Blk II missiles left the rails. They intercepted Iran Air Flight 655 at a range of 8NM from USS VINCENNES at an altitude of 13,500 feet.

E. POST INCIDENT INVESTIGATION

1. The focus of this investigation was on the key factors that figured in determination of what information was available to the Commanding Officer upon which to base his decision to engage TN 4131, the validity of that data, and what other factors entered into his decision making process. Essential to this determination was a detailed examination of the USS VINCENNES's data reduction tapes, which portray second-by-second the position, kinematics, IFF information and Link eleven (11) message flow of all contacts held by the USS VINCENNES's AEGIS Weapon System. Immediately following the incident, USS VINCENNES's AEGIS data recording tapes were transported to the Naval Surface Warfare Center, Dahlgren, Virginia, for data extraction and evaluation. The data extracted depicted the Iran Air Flight 655 flight profile from first detection to missile intercept. Further, the data allow reconstruction of all "button actions" by Command and Decision (C&D) console operators in CIC and the information available to them on their console readouts. Crucial to the investigation became close examination of the approximately 3 minute 45 second period just prior to the Commanding Officer's

final decision to fire. During this period, verbal reports were being made by one of the console operators over internal circuits of decreasing range and altitude. Additionally, the fact that the range of TN 4131 in this period was rapidly approaching the final weapons release point for the incoming aircraft factors into the decision to fire. Also, crucial to the investigation was the explanation (where possible) of the divergence between the data available in the AEGIS system derived from the data reduction tapes and the reports received by the CO and "GW" (the CO's principal air war advisor), especially the reports of "F-14", IFF", and "decreasing altitude".

2. The data from USS VINCENNES's tapes, information from USS SIDES and reliable intelligence information, corroborate the fact that TN 4131 was on a normal commercial air flight plan profile, in the assigned airway, squawking Mode III 6760, on a continuous ascent in altitude from takeoff at Bandar Abbas to shoot down.

III. FINDINGS OF FACT

A. SETTING THE STAGE

1. Intelligence Background.

a. The Gulf War

(1) The war between Iran and Iraq is the latest iteration of a conflict dating back a thousand years.

(2) Although Iraq used it's superior Air Force to target Iranian oil installations around the head of the Gulf and Kharg Island early in the war, the purchase of EXOCET missiles from France in 1983 provided Iraq with a credible ship attack capability. Anti-shipping strikes commenced in 1984.

(3) Iraq's intent on conducting anti-shipping attacks was to put economic pressure on Iran by seeking to limit Iran's oil revenue and to bring an end to the larger ground war. Iran responded in kind by striking tankers in 1984 to prevent war supplies from reaching Iraq.

(4) Since the start of the Gulf War, as a subset of the larger Iran/Iraq War, there has been history of violence in the Persian Gulf.

(5) The Gulf War intensified in 1987 when Iraq used its Air Force to conduct an aggressive campaign against Iranian oil facilities and shipping. The campaign was centered in the Central Persian Gulf (CPG) and intensified in May 1987. These expanded operations culminated in the 17 May 1987 erroneous attack on USS STARK.

(6) The United States commenced escorting Kuwaiti reflagged tankers in 1987.

(7) [ ]

(8) In addition to its strikes against neutral shipping by aircraft, Iran conducted ship attacks with surface ships and small boats. Additionally, Iran also placed mine fields across the Persian Gulf and in the Gulf of Oman in an effort to sink US warships and stop convoy operations. These mine fields resulted in severe damage to both BRIDGETON in July 1987 and USS SAMUEL B. ROBERTS in April 1988.

(9) Attacks against shipping in the latter part of 1987 and the first part of 1988 marked the most intensive anti-shipping operations by Iran during the war. The predominant Iranian attack platforms during this period were small boats employing 107mm rocket launchers, rocket propelled grenades, and small arms. Because of the use of various conventional and unconventional tactics, Iranian intentions in the Gulf were suspect at all times.

(10) Anti-shipping warfare profiles show that Iran conducted 88 ship attacks in 1987. 72% of these occurred in the shipping routes between Abu Musa Island and the UAE. From November 1987 to April 1988, all ship attacks were conducted in the southern Persian Gulf (SPG). During 1987, 50% of the attacks were conducted at night.

(11) Iran also fired Silkworm missiles at Kuwait, damaging 1 U.S. flag vessel (Sea Isle City) and another merchant tanker. In October 1987 the United States responded by an attack on the Iranian owned Rostam Oil Platform.

(12) [ ] additional Silkworm sites were constructed in the Strait of Hormuz area which threatened seaborne traffic through that choke point.

b. Iranian Air Reaction to the U.S. retaliation April 1988 (Operation PRAYING MANTIS).

(1) In retaliation for the mining of USS SAMUEL B. ROBERTS, the United States attacked the Iranian Sirri and Sasson offshore oil production facilities in the SPG on 18 April 1988. In response to the U.S. operation, Iranian aircraft and warships deployed from Bandar Abbas to join Iranian Revolutionary Guard Corps (IRGC) small boats from Abu Musa Island and Qeshm Island in attacks on U.S. owned or associated oil rigs, platforms and jack-up rigs. During the engagement with U.S. forces, two Iranian frigates and one missile patrol boat were sunk or severely damaged. F-4s scrambled during the day from Bandar Abbas. USS WAINWRIGHT launched missiles at one of the aircraft, damaging it when the aircraft failed to respond to repeated warnings and continued

to close the ship.

(2) The preponderance of the action between U.S. and Iranian forces on 18 April 1988 during Operation PRAYING MANTIS occurred in the same area where the 3 July 1988 incident with USS VINCENNES took place.

c. Iranian Aircraft Attacks on Shipping

(1) The Iranian Air Force and Iranian warships have conducted a total of 187 attacks on shipping since the campaign began in March 1984, most of those attacks occurred prior to August 1986. Fighter aircraft conducted a majority of these attacks using iron bombs and Maverick missiles. In comparison to the attacks conducted by the IRGC small boats, the air attacks were among the most damaging.

(2) Following August 1986, Iranian fighter aircraft were rarely used in the ship attacks in an apparent attempt to conserve platforms.

(3) [ ]

(4) The Iranians have Maverick missiles. Each missile can be launched from ranges of .5 to 13 NM and television guided. The launching aircraft must be able to keep visual track of the target but does not have to illuminate the target with radar.

(5) Although there has been no record of F-14s being used for iron bomb attacks, the aircraft is capable of being modified to be used in that role. To use iron bombs, the F-14 would have to close to within 2 NM of the target. That information was included in the intelligence information provided to USS VINCENNES on inchop.

(6) The most recent, confirmed Iranian Air Force anti-shipping attack was on 2 February 1988 when 2 Iranian F-4s launched Maverick Missiles at the Liberian Tanker, PETROBULK PILOT, at 30NM SSW of the point where USS VINCENNES launched its missiles on 3 July.

(7) [ ]

d. Iranian Air Force Operations 3 June-3 July 1988

(1) Iranian Air Force operating patterns changed significantly, particularly at Bandar Abbas, in the month prior to 3 July 1988.

(2) Iranian F-14's have been observed to fly at airspeeds of between 250 KTS while climbing to patrol station and 350 - 400 KTs while on patrol. During air to air intercepts the F-14's have achieved speeds of 500 - 550 KTS.

(3) Iranian F-14s were transferred to Bandar Abbas.

(4) The addition of the F-14s to the air order of battle at Bandar Abbas was perceived by CJTFME as a upgrade in Iranian air capability at Bandar Abbas.

(5) USS VINCENNES was advised by CJTFME on 18 June 1988 of the changing patterns of F-4s operating from Bandar Abbas: "All units are cautioned to be on the alert for more aggressive behavior [ ]."

(6) [ ]

(7) USS VINCENNES was advised of the deployment of Iranian F-14's to Bandar Abbas: "The F-14 deployment represents an increased threat to allied aircraft operating in SOH, SPG, and GOO."

e. The Iranian Posture 25 June-2 July

(1) In the week preceding the USS VINCENNES incident, the Iraqi Air Force stepped up its attacks on Iranian oil facilities and shuttle convoys in the Northern Persian Gulf (NPG). Iranian reaction to these successful Iraqi attacks was anticipated by CJTFME and they warned the Middle East Force, including USS VINCENNES on 2 July 1988.

(2) USS VINCENNES was apprised of the general Iranian situation on 30 June and 1 July, specifically that because Iraq had extended its successes in the ground war to the NPG with a renewed air campaign against Iranian shipping and oil facilities, Iranian reaction should be expected. "...in the meantime, anticipate IRGC ship attacks in retaliation for Iraqi Air Force attacks on Iranian shuttle tankers."

(3) [ ]

(4) The F-14 flighm Bandar Abbas during this period were:

[ ] June - patrol [ ]

[ ] June - patrol [ ]

[ ] June - patrol [ ]

[ ] June - patrol [ ]

[ ] June - patrol [ ]

[ ] June - patrol [ ]

[ ] July - patrol [ ]

[ ] July - patrol [ ]

f. Activity on 2 July, 1988 - The Maersk Attack

(1) (U) At 021600Z the Danish ship, KARAMA MAERSK, outbound from Saudi Arabia, was repeatedly, though unsuccessfully, attacked by IRGC small boats at a point 20 NM SW of Abu Musa Island.

(2) The KARAMA MAERSK issued a "MAYDAY" requesting assistance and USS ELMER MONTGOMERY responded and observed several IRGC small boats fire 3 rockets at the Danish merchant at 1630Z. The IRGC boats included at least 1 Boghammer and 2 machine gun equipped Boston Whalers.

(3) The USS MONTGOMERY fired a warning shot at the small boats at about 1730Z and the boats retired to the NW.

2. Operational Background.

a. The Administrative and Operational Organization Charts for the JTFME are contained in this report as [ ].

b. RADM Anthony A. Less, USN, was CJTFME and designated [ ] (the radio call sign for the Officer in Tactical Command) on 3 July 1988. He and his staff were embarked in USS CORONADO (AFG 11).

c. Commander Destroyer Squadron 25, was embarked in the USS JOHN HANCOCK (DD 981) and was designated [ ] (the radio call sign for the Surface Warfare Commander) by CJTFME.

d. The Commanding Officer USS VINCENNES (CG 49) was designated [ ] (the radio call sign for the Anti-Air Warfare Commander) by CJTFME.

e. [ ]

f. [ ]

g. [ ]

h. Key CJTFME personnel in flag plot during the engagement of the small boats and track 4131 were:

(1) RADM LESS - CJTFME

(2) [ ] - Deputy CJTFME

(3) [ ] - Chief of Staff, CJTFME

(4) [ ] - Assistant Operations Officer, CJTFME

(5) [ ] - Intelligence Officer, CJTFME

i. COMAIR Schedules and routes were not plotted in Flag Plot but were available in the Operations Office.

3. Rules of Engagement.

a. General

(1) The USS VINCENNES had onboard a current copy of the effective ROE for the Persian Gulf.

(2) The primary responsibility of the Commanding Officer under the ROE is the defense of his ship from attack or from threat of immenent attack. [Remainder of ROE deleted.]

4. Environmental Data.

a. (U) At 030400Z Jul 88, the following environmental data existed:

(1) Wind Speed/Direction: 10Kts/340 degrees T

(2) Sea Temp: 30 degrees C

(3) Air temp: 28.3 degrees C

(4) Relative Humidity: 62%

(5) Evaporation Duct Height: 78.5 ft

(6) Surface Pressure: 998.0 MB

(7) Visibility estimate was 8-10 miles

(8) Ceiling: approximately 200 ft/scattered

b. Predicated on the environmental data provided from USS VINCENNES on 3 July 1988, which is summarized in [ ], Joint Electronic Warfare Center (JEWC) San Antonio, Texas, concluded the following as regards ducting:

(1) Atmospheric conditions suggest USS VINCENNES was operating with a strong surface based duct (extending up to approximately 485 ft) and also within an evaporation duct extending up to approximately 78 ft.

(2) AN/SPY-1 (AEGIS radar), AN/AWG-9 (F-14 radar) and AN/UPX-29(IFF) emitters show coupling with these ducts enhancing detection ranges.

(3) The data provided by NSWC Dahlgren also validates that, in fact, SPY radar was ducting, resulting in enhanced detection ranges.

5. Commercial Air

a. General

(1) Bandar Abbas International is a joint military/ commercial airfield.

(2) A total of 18 commercial air routes cross the Persian Gulf area covering at least 50% of the navigable waters.

(3) A total of 12 commercial air routes cross the southern Persian Gulf/Strait of Hormuz area alone. Specifically, 7 into or out of Dubai/Sharjah Terminal Control Area and 5 into or out of Abu Dhabi Terminal Control Area.

(4) Commerical air flights that do not approach Iran during any part of the flight or come from non-belligerent air space and are at the high altitudes normally flown by air carriers are relatively easy to identify.

(5) The width of the airway assigned to Iranian Air FLT 655 (A-59) was: 20NM (10NM either side of Centerline) from Bandar Abbas to reporting position DARAX and 10NM (5NM either side of center line) to Sharjah. Airway A-59 runs from an altitude of 4500 feet to infinity. The total length of the air route is 123NM.

(6) At least one thousand seven hundred and seventy-five commercial air flights passed through Oman Center for the week ending 13 July 1988.

(7) The only message traffic available to CJTFME on civilian airline schedules was the "FICPAC" message of 25 June 1988. That message was readdressed to all CJTFME units on 28 June 1988.

(8) The CJTFME's inchop brief discusses commercial air traffic in general but does not focus on any specific air routes or COMAIR schedules.

(9) CJTFME's inchop brief discusses the use of MAD (Military Air Distress). Moreover ships are told to use IAD (International Air Distress) to contact commercial aircraft and "unless you are up a regional ATC frequency, use IAD to try to contact ATC."

(10) The inchop brief alludes to the "very complex but ordered" commercial air picture. It cautions all units to be concerned with those air contacts which deviate from the normal pattern.

(11) The first time that CJTFME promulgated commercial airline flight information to the ships in the Persian Gulf area was on 28 June 1988. This message showed IR 655 scheduled to depart Baddar Abbas at 0950L (0620Z) on Tuesday and Sunday of each week.

(12) The first documentation of conflict between civilian COMAIR and a CJTFME unit was on 8 June 1988 when the USS HALYBURTON issued nearly continuous challenges to an aircraft landing at Dubai International. British Airway FLT 147 acknowledged the challenge, made the turn as directed by the USS HALYBURTON and immediately came into a "near miss" situation with another civilian aircraft. A formal protest was filed by ATC Dubai and an American Embassy letter of apology resulted.

(13) The only commercial IFF information available to any JTFME unit were pass-down items from other Middle East Force ships.

(14) U.S. ships deployed to the Persian Gulf area are [ ] VHF [ ] tuned to International Air Distress (IAD) frequency 121.5 Mhz. [ ]

(15) During USS VINCENNES inchop brief conducted on 22 May, CJTFME/Air Ops and CJTFME/Asst Air Ops briefed the Helo Det on helo ops but did not specifically discuss commercial air routes or schedules.

(16) On Sunday, 3 July 1988, there were 10 civilian flights scheduled from Bandar Abbas. They were:

FLT #	TO	DEPT TIME	ACFT TYPE
IR 655	DUBAI	0959L	AIRBUS 300
IR 236	BANDARLENGEH	1240L	737
IR 236	SHIRAZ	1240L	737
IR 236	TEHRAN	1240L	737
IR 452	TEHRAN	1340L	AIRBUS 300
IR 394	ISFAHAN	1400L	737
IR 394	TEHRAN	1400L	737
IR 134	SHIRAZ	2050L	737
IR 134	TEHRAN	2050L	737
IR 458	TEHRAN	2245L	AIRBUS 300

There is no information to the contrary that the remaining flights did not launch.

(17) As a result of the attack of the USS STARK, the JCS issued an up-dated Notice to Airman (NOTAM) for the Persian Gulf, Strait of Hormuz, Gulf of Oman and North Arabian Sea dated 8 September 1987, which notified all Persian Gulf countries of additional defense precautions which U.S. warships would be exercising. It highlighted the requirement for aircraft operating in the area to maintain a listening watch on 121.5 mhz VHF or

234.0 mhz UHF. Both Department of State and ICAO report that this NOTAM was transmitted through channels to the Government of Iran.

(18) The current verbal warnings issued by CJTFME units do not clearly identify exactly which aircraft the ship is attempting to contact.

(19) Commercial aircraft normally do not have radar homing and warning (RHAW) equipment. U.S. Navy ships either "locking up" with pulsed fire control or continuous wave radars expect no reaction from a commerical air flight.

(20) For the period of 2 June 1988 to 2 July 1988, analysis of challenges and warnings conducted by CJTFME resulted in the following statistics:

(a) 150 challenges were issued
(b) only two were to COMAIR (1.3%)
(c) 125 were to Iranian military aircraft (83%)

(d) Largest number of challenges issued were by the USS SPRUANCE patrolling the eastern entrance of the SOH.

(21) No Iranian F-14's were challenged during the 2 - 17 June 1988 timeframe but seven were challenged in the 13 June - 2 July 1988 time period.

(22) Commercial air carriers have been observed changing IFF modes and codes when crossing the Persian Gulf area.

(23) Iranian military aircraft have been observed squawking all IFF (I, II, and III) modes and codes and at times follow commercial air routes within the Persian Gulf.

(24) Iraqi military aircraft have followed the air routes from Iraq during Persian Gulf shipping attack profile (SAP) missions and return using the same air routes.

(25) Iran Air Flight 655 was a regularly scheduled biweekly flight from Bandar Abbas to Sharjah, often referred to as a "HAJ" flight by ships' crews.

(26) CJTFME and CO USS VINCENNES discussed the complexity of the commercial air picture on several occasions prior to 3 July 1988.

(27) Airbus' normally climb at 350 - 370 KTS and cruise at 450 - 460 KTS.

b. Iran Air Flight 655

(1) Iran Air Flight 655 Airbus, A-300B2-202, was delivered by the French Airbus Industrie on 30 April 1982 configured with a standard civilian type Dual Collins 621-A6 IFF. The General Electric engines are identified as GE CF6-50C2. Airbus Industrie has never delivered an Airbus equipped with an IFF radar Mode II.

(2) Bandar Abbas International is the only active, joint use (military/civilian) Iranian airport in the southern Persian Gulf area.

(3) Iran Air Flight 655 was scheduled to depart Bandar Abbas at 0950 (L) or 0620Z but actually took of at 1017(L) or 0647Z.

(4) [ ]

(5) The control tower at Bandar Abbas failed to warn Iran Air Flight 655 that there was an ongoing naval engagement between U.S. Naval Forces and Iranian Revolutionary Guard naval forces (IRGN).

(6) Iran Air Flight 655, on direction of the control tower at Bandar Abbas International, turned on its IFF Mode III to 6760 on deck prior to launch and the mode was read correctly by the tower as 6760.

(7) Iran Air Flight 655 took off from Bandar Abbas International Airfield on runway 21 at 0647Z. It was cleared to Dubai via A-59 at FL 140 (14,000FT) with an assigned IFF Mode III squawk of 6760. The pilot reported passing MOBET (position report) at 0654Z and vacating FL 120 (12,000 feet).

(8) Iran Air Flight 655 squawked Mode III-6760 from take off to missile intercept.

(9) IR 655 was 3.35NM west of the centerline of air route A-59 at missile intercept, time 06:54 passing 13,500 climbing to an assigned altitude of FL 140 (14,000 ft) on course of 209.5T, at 383 KTS.

(10) Air Traffic Control Center at Abu Dhabi neither gained radar video nor established communications with Iran Air Flight 655.

6. USS VINCENNES

a. Training and Readiness.

(1) USS VINCENNES deployed 25 April 1988, on short notice, to the Persian Gulf/Middle East Force.

(2) USS VINCENNES was directed on 20 April 1988 to detach from FLEETEX 88-2 for immediate return to homeport and a 21 April 1988 deployment to the Persian Gulf/Middle East Force. USS VINCENNES transit was to be directly from San Diego to Subic Bay and onward to Middle East Force with an arrival date in the Persian Gulf of 16 May 1988.

(3) Upon notice of deployment on 20 April 1988, USS VINCENNES was in the highest state of training and readiness: C1 in Personnel, Supply, Equipment and Training; M1 in AAW, AMW, ASW, ASUW, C3, EW, and training areas.

(4) Prior to deployment on 25 April 1988, USS VINCENNES participated in interim refresher training (26 Oct - 6 Nov 1877), FLEETEX 88-1/COMPUTEX 88-3 (1-12 Feb 88) and a portion of FLEETEX 88-2 (8-19 Apr 88). On completion of interim refresher training, USS VINCENNES was found to be fully capable of performing duties as AAWC or LAAWC in Battle Group operations.

(5) During FLEETEX 88-1, USS VINCENNES participated in a Middle East Force Exercise (MEFEX) 5-8 Feb 88. This exercise simulated an "EARNEST WILL" escort mission, and provided: anti-Silkworm training, terrorist aircraft training, terrorist small boat defense, and anti-swimmer defense.

(6) USS VINCENNES did not complete FLEETEX 88-2 due to her early deployment; however, USS VINCENNES participated in the following training evolutions during FLEETEX 88-2: extensive war-at-sea strike exercises (WASEX); Silkworm missile attacks; training in ROE; and fast patrol boat attack simulations.

(7) A normal MEF augmenter pre-deployment schedule would have included in addition to the exercises listed in Finding of Facts A.6.a. (4) and (5), two Middle East Force Exercises (MEFEXs) at PMTC, PT Mugu, California, and PMRF Barking Sands, Hawaii. USS VINCENNES did not conduct these exercises because of her early deployment and accelerated transit to Subic Bay, RP.

(8) USS VINCENNES was provided AEGIS Training Center Briefs on lessons learned on the operation of SPY-1A radar in the Strait of Hormuz/Persian Gulf by AEGIS Training Center, Dahlgren, VA, while inport Subic Bay, RP, on 11 May 1988.

(9) During a four day period (9-12 May), USS VINCENNES conducted the following Middle East Force training in the Subic Bay operating areas: two missile firings (both successful), one war-at-sea strike exercise, CIWS tracking/firing, Silkworm profiles, air intercept controlling, anti-fast patrol boat exercises (night and day), surface gunnery, and surface to air gunnery.

(10) The WASEX conducted on 9 May 1988 included attacking aircraft. A post exercise critique was conducted on 10

May with USAF, USMC, and USS VINCENNES personnel present. USS VINCENNES Large Screen Display (LSD) information was used to reconstruct the events of the exercise. This reconstruction revealed USS VINCENNES had to discriminate threat aircraft from numerous other air contacts in the area including USAF AIR-AIR missile participants and norm l air traffic in the vicinity of Clark AFB and Crow Valley, RP.

(11) Prior to arrival Subic Bay, RP, USS VINCENNES modified her Battle Organization to conform to the expected "GW" assignment in the Middle East Force. In a meeting with the CO, XO, CSO and OPSO in attendance, the CO decided that CSO and OPS officer would stand watch as "GW", operating from the embarked commander's console (LSD #2).

(12) [ ]

(13) USS VINCENNES reported this Battle Organization modification was implemented during the transit from San Diego to Subic Bay, RP, and exercised during MEF training periods in Subic Bay, RP operating areas (9-12 May 1988) and during the JTFME CVBG familiarization training (21-24 may 88).

(14) Three rules of Engagement Exercises (ROEX) were conducted by USS VINCENNES during the period 6-20 May 88. These exercises tested USS VINCENNES's interpretation and correct response to current ROE for the Persian Gulf/Middle East Force.

(15) USS VINCENNES chopped to CJTFME on 20 May 1988 and was C1 in areas of Personnel, Supply, Equipment and Training as well as being M1 in AAW, AMW, ASUW, ASW, CCC, ELW and MOB.

(16) USS VINCENNES CO, TAO and GW stated in their testimony that USS VINCENNES was well prepared for their assignment to the Middle East Force by virtue of their AW (in workup exercises), "GW" experience, and in depth MEF augmenter training.

(17) USS VINCENNES conducted Battle Group familiarization training with the CVBG assigned to JTFME in the Gulf of Oman (21-24 May 88) prior to entering the Persian Gulf. Exercises conducted provided training in: WASEX, Silkworm profiles, SUCAP coordination and A/C training.

(18) Summary of USS VINCENNES operations since arriving in the Middle East Force:

27 - 27 May 88	Task Group Exercise
29 May 88	Sitrah anchorage inchop briefing
30 May 88	Sitrah anchorage AWACS/LINK interoperability
01 - 08 Jun 88	[ ] patrol
10 - 11 Jun 88	Sitrah anchorage for upkeep
12 - 16 Jun 88	[ ] patrol, conducting AAW and ASUW surveillance
17 Jun 88	[ ] patrol, conducting AAW surveillance
18 Jun 88	Sitrah anchorage for upkeep
19 - 20 Jun 88	[ ] patrol, conducting AAW surveillance
21 - 29 Jun 88	[ ] AAW surveillance and escort operations
30 Jun 88	OPS outside Straits
01 Jul 88	CPG (E) [ ]/SOH/FUJAIRAH
02 Jul 88	FUJAIRAH/SOH/[ ], AAW and ASUW surveillance
03 Jul 88	CPG (E) [ ], AAW and ASUW surveillance

(19) USS VINCENNES had not experienced combat prior to 3 July 1988.

b. Watch Organization

(1) USS VINCENNES' Battle Doctrine (VINCENNESINST C3510.1) was signed by CAPT [ ], USN, the Commanding Officer USS VINCENNES just prior to CAPT Rogers, on 1 May 85. This document has subsequently been used as a baseline for Pacific Fleet AEGIS cruisers.

(2) CO USS VINCENNES Standing, Steaming and Battle Orders were signed on 9 Jan 1988 by CAPT Rogers as a modification and sub-doctrine to USS VINCENNES Battle Doctrine.

(3) USS VINCENNES' watch organization during pre-deployment training was in accordance with CO's Battle Doctrine and Standing Orders.

(4) The CO modified basic Battle Doctrine for PG Ops by placing the SITREP officer at OSDA #1 and International Air Distress (IAD) operator at LSD #1. He also placed the data recorder (CICO) directly behind LSD #2 and #3 to maintain timeline of events. The CICO was in view of all large screens and could see "GW's" CRO.

(5) On 3 Jul 88, USS VINCENNES primary AAW watch organization was as follows:

CO
XO
TAO
OSDA
GW/FAAWC
CIC OFFICER
IAD TALKER
CSC
TIC
IDS
SLQ-32
EWS
MSS
RCS
ARC
AAWC
ACS

(6) USS VINCENNES' enlisted general quarters CIC watchstanders for 3 JUL 1988 were PQS qualified for watches held that day.

(7) The Commanding Officer USS VINCENNES certified all officer watchstanders as qualified; however [ ] had not completed PQS for AAWC (his 3 July 1988 GQ station).

(8) The Commanding Officer USS VINCENNES stated his confidence level before and subsequent to the incident in [ ] and [ ] was the highest it could be. He also stated he had great faith in his "GW" organization and his CIC team's experience.

c. Overall Combat System Status

(1) USS VINCENNES' Preventive Maintenance System (PMS), which covers the AEGIS combat system, was recorded properly and showed no significant discrepancies.

(2) The AEGIS combat system was working exceptionally well on 3 July. No anomalies were noted in data analysis or from operator statements.

(3) Semi-annual check for the OE120 IFF Phased Array Antenna was last completed in February 1988 with its next scheduled check to be completed on 12 July 1988.

(4) Upon the completion of the OE120 July Semi-Annual PMS check of the OE120 IFF antenna, the following discrepancies were noted: Phase Shifter #13 had no power out; #12 was 1.0 db below PMS Spec; one Phase Shifter was within spec. The OE 120 has a total of 16 phase shifters.

(5) [ ].

(6) The CASREP summary for USS VINCENNES shows no significant degradations of AEGIS Combat System as of the 8 o'clock reports for 2 July 1988, with the exception of CIWS (close in weapons system) Mount 22. The data from NWSC Dahlgren substantiates the excellent performance of the system.

(7) The SPY-1A signal processor alignment was completed during the last week of April 1988 and the first week of May 1988. Operational Performance Tests (OPTS) were run weekly with no significant degradation. The system had been operational almost non-stop since arrival in Gulf. Its performance was exceptional.

(8) One of the consoles in CIC(AIC) was down.

(9) At the time of the incident, Mount 22 (CIWS) was down and Mount 21 was in "AAW AUTO" mode with "hold fire" on.

d. Communications

(1) [ ]

(2) USS VINCENNES's primary radio telephone talker for [ ] was the FAAWC "GW". He was directly responsible for relaying both the surface and air tactical picture, as seen on USS VINCENNES, along with the force air picture, as seen on USS SIDES and USS ELMER MONTGOMERY, to "GB".

(3) USS VINCENNES internal net 15 is designated for warfare coordinators only, i.e. CO, TAO, OOD, SSWC, CSC, TIC.

(4) On 3 July 1988, the following CIC operators were using net 15 or 16 in addition to warfare coordinators: FWC, IDS, EWS, RSC, SITREP Officer at ECDA, EWCO and various other stations that had "punched" into the net.

(5) Internal communications had to be shifted between net 15 and 16 due to degradation of the CKT during the 3 July 1988 events.

(6) Internal net 15/16 was heavily used and difficult to get information across.

(7) Internal communications procedures, i.e. specific call ups in accordance with standard procedures, were known by operators but not always used.

e. Combat Systems Doctrine

[ ]

B. EVENTS LEADING UP TO THE AIR ENGAGEMENT

1. Ancillary Air Data

a. At 0330Z 3 July 1988 the disposition of the non-participant ships, both U.S. and Allied, was as follows:

(1) USS JOHN HANCOCK was at SITRAH anchorage in Manama, Bahrain.

(2) USS HALSEY was in the Northern Persian Gulf, RPS.

(3) USS O'BRIEN was off Kuwait waiting to begin the outbound transit of Sea Isle City and M/V Patriot.

(4) USS FAHRION was inport Ras al Khaimah for a routine port visit.

(5) USS CORONADO was pier side, Mina Sulman at Manama, Bahrain with CJTFME embarked.

(6) HMS MANCHESTER was 150 NM from the incident, outside the SOH. HMS BEAVER and the Italian warship ESPERO were in the Southern SOH, approximately 75 NM from the incident.

(7) CJTFME requested all three Allied ships to provide any information relative to TN 4131 and whether they had heard the warnings on IAD. HMS BEAVER responded by delivering its recordings and transcripts of the USS VINCENNES IAD warnings to the Senior Investigating Officer. HMS MANCHESTER indicated that it did not hear the warnings over IAD. Information received from the Italian Naval Headquarters indicated that the ESPERO did not hear the IAD warnings.

b. At 0610Z the three principle U.S. Navy warships involved in Iran Air Flight 655 incident were:

(1) USS VINCENNES (CG 49), located at 26-26 N 056-02E.
(2) USS ELMER MONTGOMERY (FF 1082), located approximately 5 NM from USS VINCENNES.

(3) USS SIDES (FFG 14), located approximately 18 NM NE of USS VINCENNES.

c. The USS FORRESTAL was on routine patrol in the Northern GOO area.

d. The USS FORRESTAL called away and launched F-14 AND E-2C at 0647Z.

e. [ ]

f. [ ]

g. [ ]

h. [ ]

i. Although the Northern AWACS was airborne, it provided no link information because the Northern AWAC's radar is unable to provide coverage of the entire Persian Gulf area.

2. Surface Engagement

a. At approximately 0330Z, USS MONTGOMERY observed seven small Iranian gunboats approaching a Pakistani merchant vessel. USS MONTGOMERY reported at 0333Z that small boats had manned machine gun mounts and rocket launchers.

b. Shortly thereafter USS MONTGOMERY observed a total of 13 Iranian gunboats breaking into three groups. Each group contained 3 to 4 gunboats with one group of four gunboats taking position off USS MONTGOMERY's port quarter.

c. [ ]

d. At 0411Z USS MONTGOMERY heard, over bridge to bridge, the gunboats questioning merchants in the area, and at approximately the same time heard 5 to 7 explosions coming from the north.

e. No merchant vessels requested assistance and by direction of "GS", at approximately 0411Z, USS MONTGOMERY proceeded to the southern section of [ ].

f. At 0412Z, "GS" directed USS VINCENNES to proceed north to the vicinity of USS MONTGOMERY and to investigate USS MONTGOMERY's report of small boats preparing to attack a merchant. USS VINCENNES's helo OCEAN LORD 25 (Lamps MK-III) on routine morning patrol was vectored to the north to monitor the Iranian small boat activity in preparation for USS SIDES transit.

g. [ ]

h. At 0615Z OCEAN LORD 25 reported being fired on by one group of small boats (TN 4667).

i. [ ], OCEAN LORD 25 crew observed several small flashes and puffs of smoke approximately 100 yards from the helo.

j. At the time of firing, OCEAN LORD 25 was 8-10 miles to the north of USS MONTGOMERY.

k. Bridge personnel on USS MONTGOMERY reported hearing five detonations to the north just prior, to USS VINCENNES's report of the firing on OCEAN LORD 25.

l. At 0613Z USS VINCENNES sounded General Quarters and proceeded north at high speed in the general direction of where OCEAN LORD 25 had been fired upon by the small boats.

m. Before returning to USS VINCENNES at high speed, OCEAN LORD 25 was able to identify the group of small boats that fired at it and identify the group to USS VINCENNES.

n. At approximately 0618Z, USS VINCENNES observed two groups of small boats 7 to 8 miles away.

o. The two groups of small boats then closed to approximately 4 miles off USS VINCENNES's starboard bow.

p. At 0620Z USS VINCENNES was directed by "GS" to take tactical control of USS MONTGOMERY. USS VINCENNES assumed tactical control and positioned MONTGOMERY 8,000 years off her port quarter.

q. At 0639Z USS VINCENNES requested permission by "GS" and "GB" to engage the small boats (TN 4667) with 5"/54 guns.

r. At 0639Z "GB" requested USS VINCENNES to verify the small boats were not departing. USS VINCENNES reported the boats were closing the USS VINCENNES and the USS MONTGOMERY.

s. At 0641Z "GS" gave permission to engage the small boats with gunfire.

t. At 0643Z USS VINCENNES and USS MONTGOMERY opened fire on two closing groups of Iranian small boats, including the group of small boats which had fired on OCEAN LORD 25.

u. CO MONTGOMERY reported that two small boats maneuvered erratically and appeared to close USS MONTGOMERY and USS VINCENNES. CO USS MONTGOMERY also stated his lookouts reported small arms fire coming from the small boats.

v. Crew members topside on USS VINCENNES reported small arms fire from the boats, and Repair Locker 2 personnel in USS

VINCENNES reported hearing what might have been small arms rounds impacting the starboard bow area.

w. CO USS VINCENNES stated that the post-action analysis indicated that shrapnel, and/or spent bullets, impacted the starboard bow of the ship and the ablative coating behind the forward missile launcher.

x. At approximately 0646Z, USS MONTGOMERY opened fire with her 5"/54 at the two westernmost contacts of the group of four. This is the group USS VINCENNES initially engaged.

y. At 0649Z one group of small boats (TN 4456), 027 degrees true from USS VINCENNES, was reported inbound and was taken under fire by USS VINCENNES's MT52.

z. At 0650Z USS VINCENNES suffered a gun casualty to MT51 resulting in a foul bore (chambered round in the gun that could not be fired).

aa. At 0651Z, "GS", in a transmission to both USS VINCENNES and USS SIDES ordered USS VINCENNES to take tactical control of USS SIDES.

bb. The foul bore in MT51 caused the TAO to maneuver the ship radically, using 30 degrees rudder at 30 KTS ship's speed, in order to keep MT52 pointed at the most threatening of the surface contacts.

cc. The high speed, large rudder angle turn caused books, publications and loose equipment to fall from desks and consoles in CIC.

dd. At 0703Z USS VINCENNES ceased firing on the small boats. A total of 72 rounds of 5"/54 ammunition was expended.

ee. At 0706Z USS MONTGOMERY reported confirmed kill on TN 4456. USS MONTGOMERY expended a total of 47 rounds of 5"/54 ammunition.

ff. [ ]

gg. Captain Rogers considered [ ] before requesting permission to engage the small boats. Those criteria included:

(1) The small boats had already committed a hostile act against his unit by firing on OCEAN LORD 25.

(2) He had positive identification of the small boats as those that had committed the hostile act against OCEAN LORD 25.

(3) He was initially prepared to disengage from the

small boats when they appeared to present no further threat to his units.

(4) His decision to disengage was changed only when the small boats began to close his units.

(5) The small boats have greater speed and maneuverability than the USS VINCENNES.

(6) The small boats carry weapons capable of inflicting significant personnel and equipment casualties.

(7) Experience with small boat tactics shows that the greatest threat they present is personnel and equipment casualties when they make high speed massed attacks on their targets, raking the superstructures of ships with gunfire and rockets.

(8) The small boats did not turn away after the VINCENNES fired its first round, but continued to close.

hh. CJTFME considered the following indicators in granting permission to engage the small boats:

(1) Positive identification of the boats as those having committed a hostile act against a U.S. ship.

(2) The small boats were not leaving the area.

(3) The small boats were closing the USS VINCENNES AND USS MONTGOMERY.

ii. USS MONTGOMERY and USS VINCENNES disengaged from the small boats when they ceased presenting a threat to U.S. ships.

C. AIR ENGAGEMENT

1. Data Extraction Background

a. USS VINCENNES's magnetic tapes containing data extracted from her SPY-1A, Command and Decision, and Weapons Control System computers, were transferred by courier from USS VINCENNES to Naval Surface Warfare Center, Dahlgren (NSWC) on 5 July 1988.

b. NSWC Dahlgren signed a receipt for the tapes on 6 July 1988.

c. NSWC Dahlgren copied the tapes and performed data reduction on the USS VINCENNES's tapes IAW standard procedures.

d. The results of that data reduction are included as [ ].

e. Preliminary data extraction results were provided by CO NAVSWC DAHLGREN messages 080516Z JUL 88 and 090708Z JUL 88. The former message stated: "Data received and successfully duplicated with the exception of less than 1% of one non-critical WCS tape. Initial basic analysis runs complete and checked. This report based on excellent SPY-1A data and correlations between SPY-1A, C&D, and WCS."

f. [ ], (Head, AEGIS Program Office, NSWC) stated that the quality of data received was "as good as any data they (his analysts) have ever worked with."

g. The data examined by NSWC Dahlgren indicated the following regarding the track of interest (TN 4131):

(1) Altitude as seen by SPY-1 increased steadily, to a maximum of 13,500 feet at intercept.

(2) Altitude readings received from TN 4131's Mode III-C IFF transmission increased steadily from take-off at Bandar Abbas to a maximum of 12,900 feet 3 seconds before intercept.

(3) The only IFF Modes received from TN 4131 as a result of interrogations by the system was Mode III-6760.

h. AEGIS Display System (ADS) data cannot be extracted. Therefore, console actions at the CO, "GW", and TAO positions cannot be determined.

i. No data tapes were available from other units, but the Mode III IFF of 6760 and increasing altitude seen in the data tapes from USS VINCENNES were corroborated by testimony and statements from USS SIDES.

j. Information [ ] further corroborated that TN 4131 was squawking Mode III-6760.

2. Time Line

a. The time line below is a summary of all the events dealing with the air engagement which occurred between 0647Z and 0654Z on 3 July 1988. From detection to intercept this was a time window of 7 minutes and 8 seconds. The time line is a reconstruction based on data extraction from USS VINCENNES's tapes, as well as statements, testimony, and log entries from USS VINCENNES, USS SIDES, and USS ELMER MONTGOMERY. The events derived from data tape extraction are underlined. The events are in chronological order, but some event times had to be estimated and may not be in precise time sequence.

b. [ ].

c. Unless otherwise noted, names and associated console

positions refer to USS VINCENNES's CFC operator positions.

d. When the term "in close control" or "hooked" is used with a TN it means that the operator referred to has the following displayed on the Character Read Out (CRO) display located on his console: TN, ID, grid coordinates, course, speed, altitude, ID amplifying information, Mode I/II/III IFF received, tracking quality, bearing and range.

e. [ ].

(1). 0647Z

(a) [ ], (EWS), [ ] (IDS), and [ ], (AIC-3) had an Iranian P-3 in close control. The P-3 was 62 miles west of VINCENNES, heading 085.

(b) The E-2C (AE-602) launched from USS FORRESTAL (CV 59), and proceeded to its assigned "EARNEST WILL" station.

(c) The SPY-1 radar initially reported the track of interest at a range of 47NM, bearing 025, initial course was 210. Mode III was 6760.

(d) The radar operators in USS VINCENNES cannot discriminate size of a contact regardless of aspect angle.

(e) [ ] (RSC) determined that TN 4131 was a single track.

(f) [ ] (49 ADT) first took close close control of the southbound track out of Bandar Abbas and made an identification as "UNKNOWN-ASSUMED ENEMY" as it went "feet wet" in accordance with [ ].

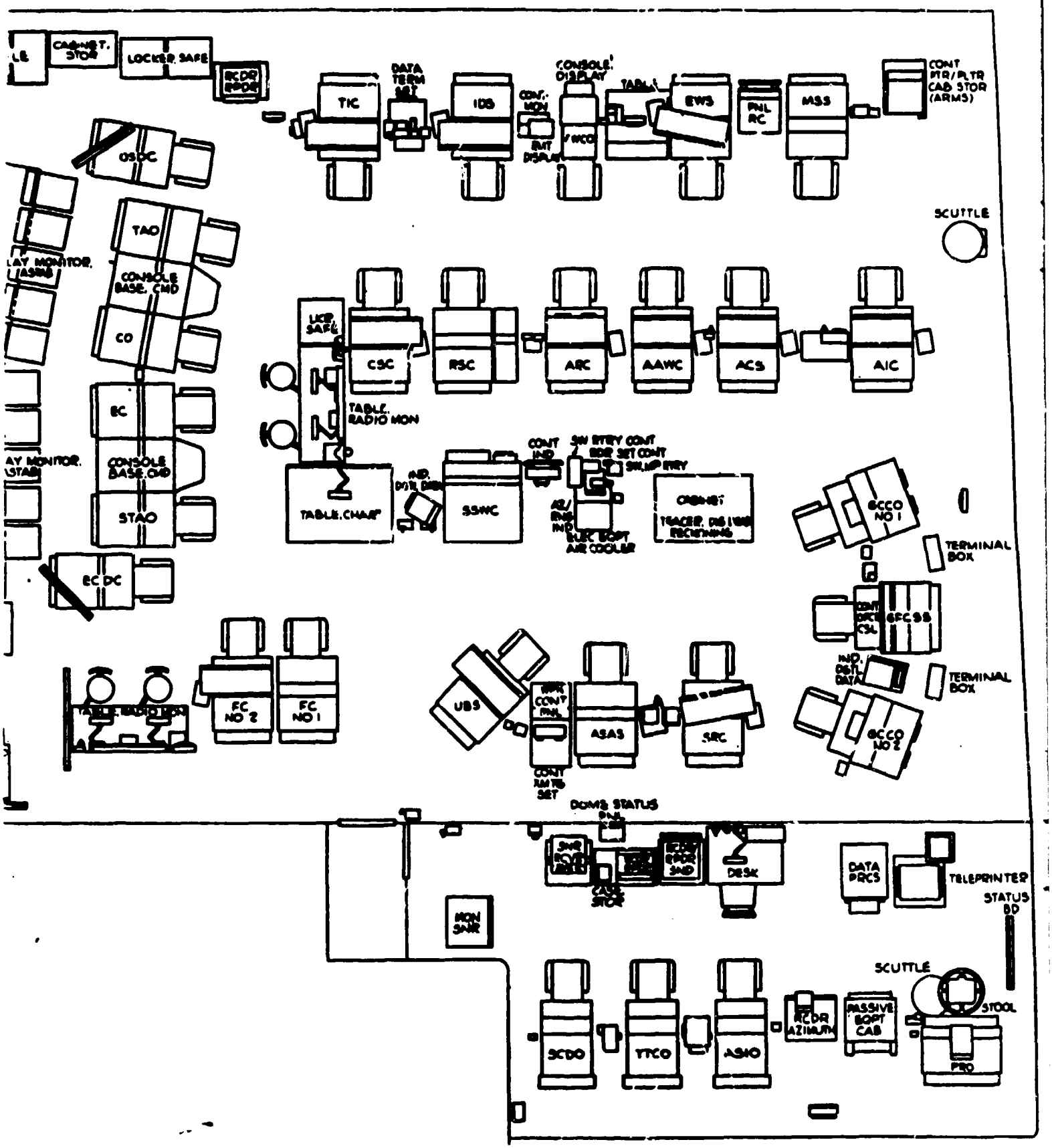
(g)[ ] (Air Detector Tracker and Track Supervisor-SIDES) recalled picking up the track on a course of 200, Speed 300kts, with a Mode III - 6700 block.

(h) [ ] (IDS) picked up Mode III-6675 as the aircraft departed Bandar Abbas. System data continued to show a Mode III of 6760.

(i) [ ] (AIC-3) also recalled seeing Mode III-6675 on his CRO.

(j) [ ] (UBS) saw Mode III-66?? and later saw an unspecified Mode II.

(k) [ ].



29a

Figure 3-2. CG 47 CIC Plan View

(l) [ ] (TIC) recalled hearing "possible F-4" launch from Bandar Abbas.

(m) [ ] (IAD) believed he heard a report of F-14's.

(n) [ ] ("GW") believed he heard a "F-14" reported.

(o) Track of interest is reported by USS VINCENNES over Link 11 as TN 4474.

(p) [ ] (CSC), [ ] (UBS), [ ] (IDS), [ ] (TIC), [ ] (FC-1), [ ] (AAWC), and [ ] (EWS) all have track of interest (TN 4474) in close control.

(q) [ ] (49 ADT) stated TN 4474 was squawking Modes II and III.

(2) 0648Z

(a) [ ] (TIC) recalled noting Mode III in his CRO for TN 4131.

(b) Commercial air schedules were available in CIC and reviewed by decision-making personnel (CO, TAO, "GW", TIC, IDS) on a regular basis prior to the engagement. The IDS specifically looked at the schedule at his console where TN 4131 first appeared.

(c)[ ] (FC-1), [ ](49 ADT), and [ ] (AAWC) took a non-squawking P-3 (track 4472 to the west (RNG 64, BRG 266, CSE 085) in close control for several seconds and returned to the track of interest (TN 4474).

(d) [ ] (TIC) recalled seeing Mode I and Mode III on the P-3 (TN 4472).

(e) The P-3 (TN 44) was challenged over both MAD and IAD. The P-3 responded that he was on a search mission and that he would stay away from USS VINCENNES. The form of the challenge was: "Iranian P-3 on course 085 speed 270 this is USN warship BRG 085 64 miles, request you state your intentions."

(f) The track of interest (TN 4474) was at a range of 44 NM, BRG 025, CSE 202, SPD 232, and at an altitude of 2500 ft. The altitude source to consoles continued to be Mode C IFF from the aircraft which was still ascending.

(g) [ ] took TN 4131 in close control.

(h) [ ]

(i) USS ELMER MONTGOMERY never gained radar contact on TN 4131.

(j) [ ] (TIC) recalled that the track number changed to TN 4131 occurred somewhere beyond 30NM.

(k) [ ] (TAO-SIDES) observed TN 4131 leaving Bandar Abbas and although it was crossing with respect to USS SIDES, he directed his Weapons Control Officer to lock-on with FC 2. The aircraft was heading southwesterly at approximately 400kts at an altitude of about 10,000 ft.

(l) [ ] (WCO-SIDES) confirmed receiving the order. He thought he noticed an IFF of 6710 but didn't see an altitude.

(m) [ ] (WCC2-SIDES) generally confirmed the range report and recalled an altitude of 3500 ft with speed 480 kts.

(n) [ ]

(o) [ ]

(3) 0649Z

(a) USS VINCENNES's Link 11 was off for 28 seconds.

(b) [ ] (AAWC) ordered TN 4131 to be challenged over the MAD and IAD nets.

(c) A MAD warning was issued by USS VINCENNES to TN 4131 "Unidentified Iranian aircraft on course 203, speed 303, altitude 4000, this is U.S. Naval warship, bearing 205, 40 miles from you. You are approaching U.S. Naval warship operating in international waters. Request you state your intentions."

(d) [ ] (49 ADT) later recalled that his speed challenges on the MAD net were much slower (about 100kts) than those given on the IAD net.

(e) [ ]

(f) [ ]

(4) 0650Z

(a) The following warning was issued to TN 4131 over IAD by USS VINCENNES: "Unknown aircraft on course 206, speed 316 position 2702N/05616E you are approaching US Naval warship request you remain clear." USS VINCENNES's system data indicated the same parameters.

(b) [ ] (IDS) reported seeing a Mode II-1100 and Mode III-6675 on his RCI about 3-4 minutes before engagement when TN 4131 was at 9000 ft and near the SE corner of Qeshm Island. He reported possible F-14 and Mode II-1100 over net 15/16 to "all stations." USS VINCENNES's system data showed only Mode III-6760 at this time.

(c) Not all RCI indications are displayed in an operator's CRO because RCI data is not always correlated with a track in the system. IFF data in C&D is always correlated with a track number.

(d) Multiple CIC personnel recalled hearing F-14 report on internal net 15 or 16, or recall it being said aloud.

(e) [ ] (CSC) never saw Mode II, but [ ] (AIC) saw Mode II-1100 and Mode III-6675 on his CRO. [ ] (AAWC) also saw Mode II-1100. USS VINCENNES's system still held no IFF Mode II and held Mode III-6760 for TN 4131.

(f) [ ] (TIC) reported rechallenging TN 4131 after Mode II report but only got a Mode III.

(g) [ ] (WCC2-SIDES) noted TN 4131 climb to 5000 ft.

(h) [ ]

(i) TN 4131 was at range of 34 NM, BRG 025, ALT 6160, and a SPD 334.

(j) [ ] ("GW") reported an inbound Iranian F-14 to "GB" [ ] (BRG 025/RNG 32 NM). He also reported that he had warned TN 4131 and that the challenge was ignored.

(k) [ ] ("GW") recalled making a report when TN 4131 was at 32 NM and recalled an earlier altitude of 9800 ft when TN 4131 was between 38-40 NM.

(l) USS VINCENNES ordered to take tactical control of USS SIDES by "GS".

(m) [.]

(n) [ ] (OSDA) tagged TN 4131 as F-14 on the LSD.

(5) 0651Z

(a) "GW" identified TN 4131 as Iranian F-14 (BRG 024/RNG 28). Indicated intention to engage at 20NM unless he turned away. Asked "GB" if he concurred. "GB" told USS VINCENNES to warn aircraft first before firing.

(b) In the limited time available, CJTFME could not verify the information passed by USS VINCENNES on TN 4131.

(c) [ ] (TAO-SIDES) recalled first being alerted to TN 4131 when USS VINCENNES reported an F-14.

(d) [ ].

(e) [ ] (AAWC) recalled altitude at 8-9 kft at 30-NM and ordered continous challenge until engagement.

(f) The following MAD challenge was issued by USS VINCENNES: "Iranian fighter on course 210, speed 353, altitude 7000 ft. you are approaching US Naval warship, operating in international waters. If you maintain current course you are standing into danger and are subject to USN defense measures. Request you change course 270 repeat 270." [ ] (SIDES) recalled hearing this report. USS VINCENNES's system data indicated the same course, speed, and altitude.

(g) An IAD challenge was issued by USS VINCENNES to TN 4131: "Unidentified aircraft on course 207, speed 350, altitude 7000. You are approaching US Naval warship bearing 205, 30 miles from you. Your identity is not known, your intentions are not clear. You are standing into danger and may be subject to USN defensive measures. Request you alter course immediately to 270." USS VINCENNES's system data indicated the same.

(h) USS VINCENNES's systems held TN 4131 at an altitude of 7000 ft at 29 NM.

(i) [ ] (SIDES) recalled challenging TN 4131 after "GS's" report and reading an IFF altitude of 7000 ft with a mode III of 6707. He evaluated it as an Iranian HAJ flight.

(j) [ ] (SIDES) recalled the evaluation as a HAJ flight and that he and [ ] had reported it to the TAO. [ ] (TAO - SIDES) does not recall hearing the report of the HAJ flight.

(k) [ ].

(l) [ ] (OSDA) recalled TN 4131 being at an altitude of 8000 ft at SE corner of Qeshm Island and descending.

(m) [ ] (AIC-3) recalled that on his 3rd look TN 4131 was just east of Qeshm Island at 9000 ft and 30 NM.

(n) [ ].

(o) [ ].

(p) [ ].

(q) [ ] observed TN 4131 slowly rising at around 8-9 kft. He jumped up and said "possible COMAIR" to the CO and [ ] ("GW"). The CO acknowledged the report by raising his hand.

(r) Airway (A-59) was depicted on LSD #2 in front of "GW" as single line and was slightly west of the actual centerline of the 20 mi wide airway.

(s) [ ].

(6) 0652Z

(a) A MAD warning was issued to TN 4131: "Iran aircraft fighter on CSE 211, SPD 360, ALT 9000. This is USN warship BRG 202 from you. Request you change course immediately to 270. If you maintain current course you are steering into danger and are subject to USN defensive measures." USS VINCENNES's system data indicated the same.

(b) [ ] (AAWC) recalled seeing TN 4131 with an altitude of approximately 9000 ft and a speed of 360-380 kts. So did the USS VINCENNES's system.

(c) [ ] (49 ADT) recalled that the highest altitude for TN 4131 was 12,000 ft at 25NM. The system held TN 4131 at 8,400 ft when it was at 25 NM.

(d) [ ](FC-1) hooked TN 4474 for 5 secs (RNG 110 NM, BRG 139, ALT 11,900, SPD 448. Forty seconds later TN 4474 was dropped from system.

(e) [ ] (CSC) recalled that the last time he looked at altitude, TN 4131 was at 22 NM at 10,300 ft. At 22 NM, USS VINCINNES's system held TN 4131 at 9200 ft.

(f) [ ].

(g) [ ] (AAWC) recalled requesting and receiving permission to illuminate at 20 NM.

(h) USS VINCENNES issued a challenge over IAD to TN 4131: "Unknown aircraft on CSE-210, SPD-360, ALT 10,000. You are approaching USN warship BRG 201, 20 miles from you. You are standing into danger and may be subject to USN defensive measures." The TN 4131 range and kinematics agreed with the USS VINCENNES's system values.

(i) USS VINCENNES issued a challenge over MAD to TN 4131: "Iranian F-14 this is USN warship bearing 199, 20 miles. Request you change course 270 immediately. If maintain current course you are subject to USN defensive measures." USS VINCENNES system data indicated the same.

(j) [ ] (TAO observer-USS SIDES) recalled TN 4131 rising in altitude as it reached CPA and continuing to rise to 10 or 11 kft.

(k) [ ] (49 ADT) stated that TN 4131 IFF broke Mode II on his RCI (not on CRO) only one time. That occurred when it was at 20 miles. It then started to decrease in altitude between 25 and 20 miles. He said on net 12 that the contact was decreasing but did not refer to it by TN. IDS and TIC also noticed a decrease according to [ ] and they said it aloud on net. USS VINCENNES's system data indicated TN 4131 was still ascending.

(l) [ ] (MSS) recalled altitude decreasing at 20 NM.

(m) [ ] (IAD) did not recall hearing declining altitude reports on net 12.

(n) [ ] (OPREP/SITREP writer) recalled hearing descending altitude.

(o) [ ] (AIC-3) recalled an altitude of 9000 ft. at 20 NM. USS VINCENNES's system data indicated the same.

(p) [ ].

(q) [ ]

(r) [ ].

(s) [ ] (IAD) recalled seeing altitude 10,500 on TN 4131

(7) 0653Z

(a) USS VINCENNES reported altitude of TN 4131 at 10,500 ft.

(b) [ ].

(c) [ ] (WCC-SIDES) Recalled that at the time of engagement, TN 4131 altitude was at 11,000 feet about 15 NM on a course paralleling SIDES.

(d) [ ] (observer-SIDES) confirmed growing excitement and yelling in CIC about COMAIR. He looked at WCO's IFF box and "read 6700 block", altitude about 11,000 ft.

(e) [ ] (CO-SIDES) recalled evaluating TN 4131 as a non-threat based on CPA to USS SIDES, F-14 ASUW capability, lack of ESM and precedent. He noted an altitude of 11,000 feet and shifted his attention to the P-3 to the west.

(f) ESM intercept:

(1) Airbus A300 carries WXR-7000C-X NAV/Weather Avoidance Radar.

(2) AN/SLQ-32 will show WXR-700-X.

(3) [ ]

(4) Neither USS VINCENNES, USS ELMER MONTGOMERY nor USS SIDES had a AN/SLQ-32 intercept of the Airbus radar.

(g) USS ELMER MONTOGMERY had no ESM contacts that would have correlated TN 4131 to an F-14.

(h) [ ] never recalled seeing an altitude above 11,000 ft.

(i) TN 4131 was at 16 NM, BRG 018, SPD 371 and ALT 11,230.

(j) [ ] (TIC) recalled target altitude of 11,000 ft at 15 NM. He began to update the range every open spot on net 15/16. USS VINCENNES's system data indicated the same values at 06:53.

(k) [ ] (GW) heard continuous reports of declining altitude.

(l) [ ] (IAD) recalled being prepared to give the final warning when another ship came up and gave a challenge. [ ] also recalled that the aircraft was at 7800 ft at that time and at 450 kts. The USS VINCENNES's system data did not hold this altitude until after missile intercept.

(m) IAD challenge issued by [ ] (USS SIDES) to aircraft BRG 204 to VINCENNES, RNG 31 kyds, squawking Mode III-6760. USS VINCENNES's system data indicated the same.

(n) [ ] (AIC-3) recalled an altitude of 7700 feet on his fourth look at TN 4131 when it was at 15 NM. USS VINCENNES system data at 15 NM showed an altitude of 11,000 ft.

(o) [ ].

(p) [ ].

(q) [ ].

(r) TN 4131 was at 14NM, Alt 12,000, and still at SPD 382.

(s) [ ].

(t) [ ].

(3) 0654Z

(a) USS VINCENNES's system held TN 4131 at RNG 12 NM, SPD 380, ALT 12,370, CSE 211 at the beginning of this minute.

(b) [ ] (RSC) reported hearing that the target had dropped in altitude 5-6000 ft at 12 NM.

(c) [ ].

(d) USS VINCENNES issued a MAD challenge to TN 4131 CSE 211, SPD 385. USS VINCENNES's system data indicated the same.

(e) [ ] (IDS) observed TN 4131 at 445 kts at an altitude of 7800 ft and descending during engagement. He recalled it being a minute from launch. USS VINCENNES's system information showed TN 4131 at an altitude of 12,000 ft., ascending, and at 380kts.

(f) [ ].

(g) [ ].

(h) [ ] (AAWC) recalled an altitude of 6000-7000 ft at engagement.

(i) [ ] (AIC-3) recalled TN 4131 at an altitude of 7-8000 feet at missile launch.

(j) [ ].

(k) [ ] (MSS) requested and received verbal confirmation of the "TAKE" order from the AAWC.

(l) USS VINCENNES reported TN 4131 at altitude of 12,500 ft.

(m) [ ] (TIC) recalled giving range and altitude reports once a mile after 11 NM. Between 15 NM and 11 NM he recalled no change in altitude.

(n) [ ] (MSS) hit the "FIRING AUTHORIZE" button. TN 4131 was at 10 NM.

(o) At 0654, a missile left the forward launcher, rail A. TN 4131 was at 10 NM, BRG 010, SPD 385 and ALT 12,950. [ ] later the second missile left the forward B rail.

(p) [ ] (49 ADT) recalled that at 10 NM TN 4131 was 7800 feet. He stated "That, I haven't been able to get out of my mind."

(q) [ ] recalled hearing after the shot that the altitude was 7800 ft.

(r) [ ] (TIC) recalled the missiles leaving the rail when TN 4131 was 10,000 feet at 10 NM, altitude declining. He also recalled it at 9 NM at missile launch.

(s) [ ] (IAD) was in process of initiating the last IAD warning when missiles went off. The message was not sent.

(t) The sound of missiles going off was recorded on IAD net.

(u) TN 4133, [ ] was reported by SPY-1 [ ] from Bandar Abbas. RNG was 42 NM.

(v) [ ].

(w) [ ].

(x) [ ].

(y) [ ] (AIC-3) said he wrote IFF Mode II-1100 and Mode III-6675 on his console shortly before intercept.

(z) [ ] (49 ADT) took TN 4133 in close control and identified it as[ ] TN 4133 was squawking Mode I-11. AAWC and IDS also took TN 4133 in close control.

(aa) At 0654 USS VINCENNES received last mode C altitude from TN 4131 which was at 12,900 ft. [ ] (49 ADT) returned to TN 4131.

(bb) At 0654 missile #1 intercepted TN 4131 at RNG of 8 NM, BRG 001, ALT 13,500, SPD 383. Altitude reported from USS VINCENNES was 13,500. [ ] later missile #2 intercepted TN 4131.

(cc) CO, USS MONTGOMERY, located on the ship's port bridge wing, observed the missiles impact TN 4131 and the descent of the aircraft.

(dd) [ ] (MSS) recalled an altitude of 7000 feet and range of 6 NM at intercept. System data indicated a range of 7 NM after intercept.

(ee) [ ] (UBS) recalled target at 7000 feet and 6 miles when it was shot.

(ff) [ ].

(gg) [ ] recalled recording altitude of 7800 and range 6 NM on his console at intercept.

(hh) TN 4131, at 17 seconds after intercept, was at altitude 12,000.

(9) 0655Z

(a) TN 4131 descended rapidly following missile intercept.

(b) The aircraft went down approximately 6.5 miles east of Hengham Island at 26-37.75'N/56-01'E. This was 3.37 miles west of the centerline of Air Route A-59.

3. Facts Bearing on the Commanding Officer's Decision

a. Table 1 summarizes the information detailed in the

prior section that was available to CO USS VINCENNES with respect to TN 4131.

b. CAPT Rogers recalled having the following indicators in declaring track 4131 hostile and deciding to engage:

(1) F-14s had been recently moved to Bandar Abbas.

(2) Iranian fighters had flown coincident with surface engagement on 18 April 1988.

(3) The aircraft was not responding to verbal warnings over IAD or MAD.

(4) There had been warnings of an increased threat over the July 4th weekend.

(5) Increased hostile activity had been predicted for the 48 hours following recent Iraqi military victory.

(6) The aircraft was not following the air corridor in the same manner as other commercial aircraft had been seen consistently to behave (i.e., flying exactly on the centerline).

(7) It was flying at a reported altitude which was lower than COMAIR were observed to fly in the past.

(8) Track 4131 was reported to be increasing in speed.

(9) Track 4131 was reported to be decreasing in altitude.

(10) Track 4131 was CBDR to USS VINCENNES and USS MONTGOMERY.

(11) Track 4131 was reported by USS VINCENNES's personnel squawking Mode II-1100 which correlates with an F-14.

(12) No ESM was reflected from track 4131, however, F-14s can fly "cold-nose" (no emitters).

(13) F-14s have an air-to-surface capability with Maverick and modified Eagle missiles.

(14) The aircraft appeared to be maneuvering into an attack position.

(15) [ ].

TABLE 1 INFORMATION AND OBSERVATIONS

SOURCE	MODE 3			MODE 2			ALT COMMENT	HIGHEST ALT	ID AS F-14
	BCI	CRO	UNK	BCI	CRO	UNK			
VINCENNES SYSTEM		6760					ALWAYS ASCENDING	13.5K	
IAD/NAD TAPES			5760(SIDES)				ALWAYS ASCENDING	10K @ 20 MN	TRANSMITTED
ABC/NAD TALKER				1100			DESCENDS AT 20 MN	12K @ 25 MI	HEARD
IAD TALKER		1100			67XX		DESCENDS AT 20 MN	10.5K @ 20 MN	HEARD
IDS	6675	6675		1100	1100		DESCENDS 1 MIN PRE LAUNCH TO 7.8K	9K @ 30 MI	CALLED "F-14"
ACS		6675			1100		DESCENDS TO 7-7.8K	9K @ 30 MI	HEARD
AAMC			6XXX	1100			DESCENDS TO 6-7K AT INTERCEPT	9K @ 30 MI	HEARD
[redacted] TIC MONITOR			YES	1100			<6K AT INTERCEPT		
TIC	YES	YES		NO	NO		DESCENDS FROM 11MI TO 8.8K	11K @ 15 MI	HEARD
NBS			YES				DESCENDS FROM 20MI TO 6-7K		HEARD
SSC							DESCENDS TO 8K	10K @ 300KTS	
SSMS		66XX					DESCENDS AFTER 30MI		
CSC							NEVER SAW DESCEND	10.3K @ 22MI	
[redacted] RECORDER					NO			6-9K	HEARD
OSC [redacted]			6675				SAW DESCENDING		HEARD
SITREP WRITER								10K	HEARD

NOTE: A "YES" ENTRY INDICATES AN UNSPECIFIED CODE.
A "NO" ENTRY INDICATES LOOKED, BUT NO CODE OBSERVED.

(16) Visual identification of the aircraft was not feasible.

c. [ ] recalled the following additional indicators which he used in assessing the threat posed by TN 4131.

(1) The aircraft had lifted off from a military airfield in Iran heading south.

(2) The aircraft appeared to veer toward USS MONTGOMERY after CAPT Rogers ordered that the target be illuminated.

(3) The aircraft's lift off from Bandar Abbas was observed to be in a pattern that did not match previous COMAIR flights.

(4) Track 4131 was reported as an F-14.

(5) [ ].

(6) P-3 turned inbound.

d. CJTFME considered the following indicators when concurring in USS VINCENNES decision to engage track 4131:

(1) The aircraft had been identified by USS VINCENNES as an F-14.

(2) USS VINCENNES indicated that the aircraft was inbound on USS VINCENNES.

(3) USS VINCENNES was told to warn the aircraft.

D. POST ENGAGEMENT ACTIVITY

1. Search and Rescue

a. [ ]

b. Several Iranian helicopters were in the area of the wreckage by 0750Z.

c. At least one hovercraft and up to 20 small boats including tugs were probably involved in SAR effort from 0800Z thru 1200Z.

d. An unofficial list of Iranian Air FLT 655 passengers and crew is included [ ].

e. USS MONTGOMERY and USS VINCENNES were ordered by "GW" to provide assistance to the crash site.

f. USS VINCENNES offered assistance but got no response.

2. Operational Reporting

a. 0719 - VINCENNES reported F-14 splashed.

b. CJTFME initially reported the boat engagement by CJTFME 030710Z Jul 88, OPREP-3P/004. Included was the first indication of an "unknown assumed hostile closing from north."

c. CJTFME updated their OPREP-3/004 with CJTFME 030727Z Jul 88, OPREP-3/004A, confirming kill of an Iranian F-14. Details of altitude, spped, and IFF were provided.

d. CJTFME OPREP 3P/004B 031445Z Jul 88 reported the downing of the probable F-14 and noted that CJTFME had been informed of the fact that IR 655 was overdue at Dubai.

e. VINCENNES OPREP-3 031630Z Jul 88 was readdressed by CJTFME under the same DTG providing a timeline for both surface and air engagement and reconfirming altitude as 7800 feet and descending, speed 445 kts, Mode II, 1100, ID as F-14, and that the aircraft had ignored MAD and IAD warnings. Additionally; TN 4131, Bearing/Range 005T/9NM; Mode III, 6675, course 185T, and CBDR amplifying data was supplied.

IV. OPINIONS

A. GENERAL

1. The USS VINCENNES did not purposely shoot down an Iranian commercial airliner. Rather, it engaged an aircraft the Commanding Officer, USS VINCENNES believed to be hostile and a threat to his ship and to the USS MONTGOMERY (FF 1082).

2. Based on the information used by the CO in making his decision, the short time frame available to him in which to make his decision, aand his personal belief that his ship and the USS MONTGOMERY were being threatened, he acted in a prudent manner.

3. Iran must share the responsibility for the tragedy by hazarding one of their civilian airliners by allowing it to fly a relaatively low altitude air route in close proximity to hostilities that had been ongoing for several hours, and where IRGC boats were actively engaged in armed conflict with U.S. Naval vessels.

4. The downing of Iran Air 655 was not the result of any negligent or culpable conduct by any U.S. Navy personnel associated with the incident.

5. Based on the information available to CJTFME, his confidence in CAPT Rogers and the capabilties of USS VINCENNES, his concurrence to engage TN 4131 was correct.

6. The AEGIS Combat System's performance was excellent - it functioned as designed. Had the CO USS VINCENNES used the information generated by his C&D system as the sold source of his tactical information, the CO might not have engaged TN 4131.

7. Time compression played a significant role in the incident. From the time the CO first became aware of TN 4131 as a possible threat, until he made his decision to engage, the elapsed time was approximately three minutes, 40 seconds. Additionally, the Commanding Officer's attention which was devoted to the ongoing surface engagement against IRGC forces (the "wolf closest to the sled"), left very little time for him to personally verify information provided to him by his CIC team in which he had great confidence. The fog of war and those human elements which affect each individual differently--not the least of which was the thought of the Stark incident--are factors that must be considered.

8. The digital data extracted from USS VINCENNES data recording tapes is valid and provided invaluable insights and information for the reconstruction of the events of 3 July 1988 including the evaluation of individual CIC console operator actions.

9. The Commanding Officer VINCENNES decision to engage TN 4131 was based primarily on the following:

(a) The aircraft had lifted off from an airfield used jointly by military and civilian aircrft in Iran heading directly toward his ship at a relatively low altitude.

(b) Track 4131 was CBDR to USS VINCENNES and USS MONTGOMERY.

(c) TN 4131 was flying at a reported altitude which was lower than USS VINCENNES observed COMAIR to fly previously. Additionally, it was not flying exactly on the airway center-line as USS VINCENNES had seen previous COMAIR consistently do.

(d) It appeared to veer toward the USS MONTGOMERY.

(e) Track 4131 was reported to be increasing in speed, decreasing in altitude, and closing range.

(f) No ESM was reflected from track 4131, however, F-14s can fly "cold nose" ( ).

(g) The aircraft was not responding to verbal warnings over IAD or MAD.

(h) Track 4131 waas reported by USS VINCENNES personnel to be squawking Mode II-1100 which historically correlated to Iranian F-14's.

(i) The aircraft appeared to be maneuvering into an attack position.

(j) Visual identification of the aircraft was not feasible due to the lack of combat air patrol.

(k) Iranian fighter aircraft had flown coincident with the surface hostilities involving U.S. and Iranian Forces on 18 April 1988.

(l) Warnings had been issued for increased hostile activity for the 48 hour period which included the July 4th weekend.

(m) An Iranian P-3 airborne to the west of USS VINCENNES, turned inbound.

(n) The Stark incident.

(o) Iranian F-14s have an air-to-surface capability with Maverick missiles, iron bombs, and modified Eagle unguided rockets.

(p) TN 4131 could have been a suicide attack.

10. Having other forces under his tactical control (SIDES, MONTGOMERY) intensified the CO USS VINCENNES's feeling of responsibility to defend his task group from hostile action.

11. The information available to CO, USS VINCENNES, upon which he based his decisions, conflicted in some cases with the data available in USS VINCENNES' command and decision (C&D) system. Specifically:

(a) The C&D system contained no Mode II IFF information on TN 4131 yet operators in CIC had used Mode II as a means of declaring TN 4131 an Iranian F-14.

(b) The C&D system showed TN 4131 continuously ascending, while the CO received reports of "descending altitude" immediately prior to enabling the firing key.

12. Psychological factors: As the investigation developed, and it was discovered that there were disparities between the C&D tape data and what various members of CIC believed they saw, the

senior investigationg officer requested the professional advice of USN Medical Corps personnel who have studied combat stress. The following opinions draw heavily on their conclusions.

Stress, task fixation, and unconscious distortion of data may have played a major role in this incident.

TIC and IDS became convinced track 4131 was an Iranian F-14 after receiving the IDS report of a momentary Mode II.

After this report of the Mode II, TIC appears to have distorted data flow in an unconscious attempt to make available evidence fit a preconceived scenario. ("Scenario fulfillment")

TIC's perception that there was an inexperienced, weak leader in the AAWC position led to the emergence of TIC in a leadership role. TIC's reports were accepted by all and could have influenced the final decision to launch missiles.

13. Captain Rogers' action in delaying engagement of TN 4131 with missiles until it was well within 15 NM demonstrated an appreciation for the seriousness of the consequences of his actions and was balanced with his responsibility to defend his ship.

B. RULES OF ENGAGEMENT

1. CJTFME and CO, USS VINCENNES, properly selected and applied the correct Rules of Engagement to both the surface and air engagements.

2. Based upon the information presented to Captain Rogers, engagement of TN 4131 was within the parameters of the Rules of Engagement.

C. THIS SECTION INCORPORATES VARIOUS OPINIONS RELATED TO THE USS VINCENNES's TRAINING, READINESS, AND BATTLE ORGANIZATION.

1. Training and Readiness/Battle Doctrine.

a. The USS VINCENNES was adequately trained to perform her missions as a unit of JTFME.

b. With the exception of the AAWC position, USS VINCENNES' General Quarters AAW watch organization was experienced and qualified.

c. Ship's Battle Doctrine was sound.

2. CIC Watch Organization.

a. "GW" was considered by CO USS VINCENNES as his primary force and ship air warfare advisor.

b. The Persian Gulf modifications to the USS VINCENNES's CIC organization moved the ship's AAW coordination function away from AAWC and left him acting largely as a console operator. Assignment of "GW" to Force AAW, Ship AAW, and [ ] talker for surface and air SITREPS degraded his ability to independently assess the actual profile and ID of TN 4131.

3. Material/Combat Systems Readiness.

a. There were no AEGIS combat systems maintenance or materiel problems which contributed to the incident.

D. SURFACE ENGAGEMENT

1. OCEAN LORD 25 took hostile fire from one of the groups of IRGC small boats it had been monitoring.

2. The group of boats which USS VINCENNES took under fire included the group which had fired at OCEAN LORD 25.

3. USS MONTGOMERY and USS VINCENNES were fired upon by IRGC gun boats during the course of the surface engagement.

4. The ongoing surface engagement was a significant factor in increasing tension within USS VINCENNES's CIC.

5. The foul bore and resulting high speed maneuvering of the ship to keep MT 52 in position to engage IRGC craft were complicating factors which prevented the CO from devoting his full attention to TN 4131, and it contributed to the tension in the CIC of USS VINCENNES.

6. The surface engagement conducted by USS VINCENNES and USS MONTGOMERY was effective.

E. AIR ENGAGEMENT

1. [ ].

2. At no time did IR 655 actually descend in altitude prior to engagement.

3. Iran Air Flight 655, an Airbus 300, was on a normal climb out from Bandar Abbas and was flying within the established air route, A-59, from Bandar Abbas to Dubai.

4. IR 655 was not on the exact center of airway A-59, but was 3.37 NM west of the centerline. However, it was in the assigned airway.

5. Iran Air Flight 655 was not squawking Mode II-1100, but squawked Mode III-6760 during the entire flight.

6. The IDS mis-correlated an RCI readout of Mode II-1100 with TN 4131. This occurred, according to analysis of the data, when the IDS hooked TN 4131 as it departed Bandar Abbas and left it hooked for almost 90 seconds. This meant that as the hooked symbol moved toward USS VINCENNES the read-gate for the RCI remained near Bandar Abbas. A Mode II transmission from an aircraft on the ground in Bandar Abbas would then be displayed in in his RCI if the signal could get to the ship.

7. The un-correlated IFF Mode II-1100 obtained by IDS could have been generated by a military aircraft (C-130, F-4, F-14) located on the ground at Bandar Abbas. This was supported by his IDS' RCI set-up and the RF ducting condition in effect on 3 July. Therefore, any number of military aircraft, present at the airfield, could have responded to a Mode II IFF interrogation by USS VINCENNES due to the ducting conditions prevalent that day.

8. The CO, "GW" and key CIC AAW operators sincerely believed that they were engaging a hostile aircraft.

9. The range and altitude information passed to the CO on Net 15 was correct until TN 4131 reached approximately 15 NM. Approximate time 06:53.

10. TN 4133 which departed Bandar Abbas almost simultaneously with missile launch was squawking Mode I-11 and could have been a potential source of confusion between Mode I-11 and Mode II-1100 on IDS and AAWC's RCI.

11. In the excitement of the impending engagement, it is entirely possible that reports of decreasing altitude passed over the net by TIC after the 15 NM point could have occurred if TIC passed only range values, which were interpreted as altitude, or he simply mis-read his CRO and interchanged altitude and range.

12. The ship's air controller supervisor's recollection of 7800 ft altitude at 6 NM was actually the altitude of TN 4131 33 seconds after missile intercept. In other words, the plane's altitude as it was plummeting to the water.

13. Recollection of Mode III IFF responses other than 6760 for TN 4131 were caused by imperfect recall by the IDS, ACS, AAWC, console operators in CIC, as well as the post incident SITREP writer.

14. The violent maneuvers of the ship, the noise of the guns firing, gear falling in CIC and the lights in the LSD's flickering, heightened the tension in CIC during the critical time TN 4131 was being evaluated.

15. IFF codes are not absolute determinators for engagement. Mode III is the least reliable because all aircraft are capable of squawking Mode III.

16. [ ].

17. There were no Link-11 dual designations (two separate vehicular tracks with the same LINK-11 STN) of TN 4131 during the period of interest. Therefore, a LINK-11 track crossover problem did not occur.

18. The warnings issued by USS VINCENNES over IAD and MAD nets were transmitted and were heard by other units. However, it is impossible to know whether a particular aircraft has heard a challenge unless it replies or turns away.

F. COMMERCIAL AIR

1. Commercial air, particularly commercial air from Iran, is at risk in the Persian Gulf as long as hostilities continue in the area. Unless an aircraft can be visually identified as a

non-threat, any aircraft approaching a U.S. Navy ship could be considered a threat. However, an aircraft at high altitude (above 25,000 ft) will likely not be evaluated as a threat.

2. U.S. Navy units operating in the Persian Gulf have insufficient current information on commercial traffic schedules, on commercial air routes and on the type and ranges of IFF codes used by commercial traffic. With over 1,000 commercial flights per week within the Persian Gulf area, it would be difficult for individual ships to maintain current, accurate airline information.

3. Due to heavy pilot workload during take-off and climb-out, and the requirement to communicate with both Approach Control and Tehran Center, the pilot of Iran Air Flight 655 probably was not monitoring IAD.

4. Any aircraft, including commercial aircraft, could be used in a suicide mission role, therefore, Commanders cannot disregard an aircraft squawking Mode III, IFF, flying on a commercial air corridor, and on a CBDR to his ship.

5. Current verbal warnings and challenges used by JTFME units are ambiguous because they do not clearly identify to pilots exactly which aircraft the ship is attempting to contact.

6. The limited number of VHF radios on U.S. surface units degrades their ability to simultaneously monitor the IAD frequency and communicate with civilian air traffic control agencies.

7. Bandar Abbas Tower, Approach Control and Tehran Center did not hear, or failed to relay, the IAD warnings issued by USS VINCENNES to IR 655.

8. The current tools used by the U.S. Navy for differentiating between friendly and hostile unknown aircraft were designed primarily for the open ocean environment. U.S. Naval weapon systems can reach further and often react more quickly than sensors can evaluate. This is especially true in the Persian Gulf areas where reaction time is constrained by geography. Therefore, altitude is one of the most useful indicators for establishing "no hostile intent."

G. CJTFME

1. CJTFME's confidence in CO USS VINCENNES, and in the capability of the AEGIS system, coupled with information available to him in his Flag Plot, were the factors involved in his concurrence with CO, USS VINCENNES decision to engage TN 4131. He exhibited prudence and good judgment in telling USS VINCENNES to warn the aircraft before engaging it.

2. Because CJTFME did not have a usable real time data Link, he could not have independently verified the data provided by USS VINCENNES regarding TN 4131.

3. The CJTFME watch organization was sound, personnel were qualified and they performed satisfactorily.

V. RECOMMENDATIONS

A. General

1. No disciplinary or administrative action should be taken against any US naval personnel associated with this incident.

2. Since it appears that combat induced stress on personnel may have played a significant role in this incident, it is recommended the CNO direct further study be undertaken into the stress factors impacting on personnel in modern warships with highly sophisticated command, control, communications and intelligence systems, such as AEGIS. This study should also address the possibility of establishing a psychological profile for personnel who must funtion in this environment.

3. Visual identification (VID) is the only positive means to distinguish friendly or commercial aircraft from potentially hostile aircraft. Since there is insufficient U.S. land or carrier based tactical aircraft to provide continuous VID duties in the Persian Gulf, the USG should immediately convey the following to the Government of Iran:

> "To minimize the risk of another accidental shoot down of a commercial airliner, the Government of Iran should be aware that any fixed-wing aircraft flying over the waters of the Persian Gulf to or from Iran is suspect as to its intentions towards U.S. Naval Units. Neither United States Naval Forces, nor those of any other nation, are capable of assessing the intentions of an aircraft in flight. Accordingly, to avoid the possibility of an accident, and to preclude possible defensive actions by U.S. warships and aircraft in the Persian Gulf, United States naval forces will presume that any aircraft entering or exiting over Persian Gulf waters to or from Iranian Air Space will be considered a non-threat to U.S. forces only if it transits over the Gulf waters at an altitude greater than 25,000 feet. Small aircraft incapable of reaching 25,000 feet and rotary wing aircraft should make their intentions known by radio at least five miles from any U.S. unit."

4. That no changes be made to the existing ROE.

5. To prevent the possibility that commercial aircraft could become innocent victims in this area of armed conflict, the USG should seek ICAO's immediate attention to revise the existing commercial air route structure over the waters of the Persian Gulf. The State Department should direct our embassies to urge affected countries to cooperate in this endeavor. Pending the results of this request, the USG should also urge ICAO to promulgate an immediate NOTAM that all flights climb to at least 25,000 feet over land prior to crossing the Gulf and begin their descent over land.

6. Concur with the measures taken by USCINCENT to enhance commercial air safety over the Persian Gulf with the exception of paragraph 1.C.(1)(B), relative to voice warnings. It is recommended that this paragraph be revised as follows:

> "Unidentified air/surface contact squawking.....(EX: MOD III - XXXX), at .....(Positional reference to some geographical point), at ..... altitude, on course ....., speed ....., You are approaching U.S. warship operating in international waters. Your identity is not known/your intentions are unclear (one or both), you are standing into danger and may be subject to United States defensive measures. Request you alter your course immediately to remain clear of me."

7. That CJTFME strengthen the MEF "inchop brief" to include an in-depth review of the unique problems associated with COMAIR within the Persian Gulf Area.

8. That CJTFME continue to liaise with Air Traffic Control agencies and American embassies to resolve the COMAIR problems unique to the Persian Gulf Area (e.g., identification, communications, ICAO procedures, etc.).

B. <u>USS VINCENNES BATTLE ORGANIZATION</u>

1. That the Commanding Officer, USS VINCENNES, take action as required to strengthen the AAWC position in the USS VINCENNES' CIC organization.

2. That the Commanding Officer, USS VINCENNES, incorporate the CIC organization modifications required by Persian Gulf operations into the existing Battle Doctrine. Because USS VINCENNES uses a split warfare TAO CIC organization e.g., surface and air, "GW" should not be given responsibility as a radio telephone talker.

C. AEGIS SYSTEM RECOMMENDATIONS:

1. It is recommended the CNO:

a. Determine the cause of reported STC-2/IVCS net 15/16 degradation (due to loading), and issue a class advisory if required.

b. Reassess the design of the AEGIS large screen display (LSD) to allow the option of displaying altitude information directly on the LSD.

c. "Investigate the best means of providing a mode in the UPX-29 which slave the RCI challenge gate to a hooked track."

D. TRAINING ENHANCEMENTS.

1. If we must operate in a low intensity conflict and in the presence of COMAIR, we must train to that environment, real or simulated. Request the CNO develop a fleet wide identification matrix for dense air traffic environments in third world/low intensity conflicts. Battle Group training doctrines, AAW procedures, numbered Fleet C mmander Fighting Instructions, and workups should reflect consensus on ID matrices to deconflict COMAIR within war zones, when being used as "cover" for military aircraft, or when being used as suicide attackers. For example, live missile exercises could include a percentage of the inbound drones be flown on COMAIR profiles, with proper modes and codes, in close proximity of simulated hostile targets. Another method would be to have aggressor aircraft act as COMAIR to challenge the deconfliction capabilitites of surface ships with/without VID capability.

2. Request CNO review AEGIS IFF operator training procedures and provide a class advisory to ensure operator familiarity of pros and cons of various RCI selectable modes.

WILLIAM M. FOGARTY

LIST OF ACRONYMS/UNOFFICIAL NAVY ABBREVIATIONS

ACRONYM	DEFINITION
AAW	ANTIAIR WARFARE
AB	ALPHA BRAVO (CALL SIGN)
AC	AIRCRAFT
ACS	AIR CONTROL SUPERVISOR
ACTS	AEGIS COMBAT TRAINING SYSTEM
ADS	AEGIS DISPLAY SYSTEM MK 1
ADT	AUTOMATIC DETECTION AND TRACKING
AECM	ACTIVE ELECTRONIC COUNTERMEASURES
AEW	AIRBORNE EARLY WARNING
AIC	AIR INTERCEPT CONTROLLER
ARC	AIR RADAR CONTROLLER
AS	ALPHA SIERRA (CALL SIGN)
ASAC	ANTISUBMARINE AIR CONTROL
ASAS	ANTISUBMARINE AIR SUPERVISOR
ASO	ACOUSTIC SENSOR OPERATOR
ASROC	ANTISUBMARINE ROCKET
ASTAB	AUTOMATED STATUS BOARD
ASUW	ANTISURFACE WARFARE
ASW	ANTISUBMARINE WARFARE
ATACO	AIR TACTICAL CONTROLLER
ATO	AIRBORNE TACTICAL OFFICER
AW	ALPHA WHISKEY (CALL SIGN)
AWACS	AIRBORNE EARLY WARNING & CONTROL SYSTEM
AX	ALPHA X-RAY (CALL SIGN)
BBD	BRIGHT BRIDGE DISPLAY
BCO	BRIGHT BRIDGE CONSOLE
BG	BATTLE GROUP
BOL	BEARING ONLY LAUNCH
B/R	BEARING/RANGE
BT	BATHYTHERMOGRAPH
C&D	COMMAND & DECISION SYSTEM MK 1
C&R	COMMAND & REPORTING
CAP	COMBAT AIR PATROL
CASREP	CASUALTY REPORT
CCSS	COMBAT CRYPTOLOGICAL SUPPORT SYSTEM
CDR	COMMANDER
CENTCOM	U.S. CENTRAL COMMAND
CFAR	CONSTANT FALSE ALARM RATE
CIC	COMBAT INFORMATION CENTER
CICWS	CIC WATCH SUPERVISOR
CJTFME	COMMANDER JOINT TASK FORCE MIDDLE EAST
CINCCENT	COMMANDER IN CHIEF, CENTRAL COMMAND
CMEF	COMMANDER MIDDLE EAST FORCE
CO	COMMANDING OFFICER
COC	CONTROL OFFICER CONSOLE
COMAIR	COMMERCIAL AIRLINES
COMMS	COMMUNICATIONS
CPA	CLOSEST POINT OF APPROACH
CRO	CHARACTER READ OUT
CSC	COMBAT SYSTEM COORDINATOR
CSLC	COHERENT SIDELOBE CANCELLOR

CSO	COMBAT SYSTEM OFFICER
CSOOW	COMBAT SYSTEM OFFICER OF THE WATCH
CSOP	COMBAT SYSTEM OPERATING PROCEDURES
CSOSS	COMBAT SYSTEM OPERATIONAL SEQUENCING SYSTEM
CSRO	COMBAT SYSTEM REPAIR OFFICER
CSRT	COMBAT SYSTEM READINESS TEST
C/S	COURSE/SPEED
CT	CRYPTOLOGICAL TECHNICIAN
CTF	COMMANDER TASK FORCE
CTSL	CENTRAL TRACK STORES LOCATOR
CWC	COMPOSITE WARFARE COMMAND
CWI	CONTINUOUS WAVE ILLUMINATION
DC	DAMAGE CONTROL
DDRT	DIGITAL DEAD RECKONING TRACER MK 6
DECM	DECEPTIVE ELECTRONIC COUNTERMEASURES
DEG/T	DEGREES TRUE
DET	DETACHMENT
DICASS	DIRECTIONAL COMMAND ACTIVATED SONOBUDY SYSTEM
DIFAR	DIRECTIONAL FREQUENCY ANALYSIS & RECORDING
DROP SYNC	DROP SYNCHRONIZATION
DSA	DATA LINK SUPPORT & ADMINISTRATION
DWN	DOWN
D/W	DEAD IN THE WATER
EC	EMBARKED COMMANDER
ECCM	ELECTRONIC COUNTER-COUNTERMEASURES
ECDA	EMBARKED COMMAND DISPLAY ASSISTANT
ECM	ELECTRONIC COUNTERMEASURES
EMCON	EMISSION CONTROL
EMO	ELECTRONIC MAINTENANCE OFFICER
EOOW	ENGINEERING OFFICER OF THE WATCH
EOP	ENGINEERING OPERATING PROCEDURES
ESM	ELECTRONIC SUPPORT MEASURES
ESMO	ESM OPERATOR
EW	ELECTRONIC WARFARE
EWCO	ELECTRONIC WARFARE CONSOLE OPERATOR
EWS	ELECTRONIC WARFARE SUPERVISOR
FAAWC	FORCE ANTIAIR WARFARE COORDINATOR
FAD	FORCE AIR DEFENSE
FAP	FACILITIES ATTACK PROFILE
FASUWC	FORCE ANTISURFACE WARFARE COORDINATOR
FASWC	FORCE ANTISUBMARINE WARFARE COORDINATOR
FC	FORCE COORDINATOR
FCS	FIRE CONTROL SYSTEM
FEWC	FORCE ELECTRONIC WARFARE COORDINATOR
FICPAC	FLEET INTELLIGENCE COMMAND, PACIFIC
FM	FROM
FTC	FORCE TACTICAL COMMANDER
FTP	FLY TO POINT
FWC	FORCE WARFARE COORDINATOR
GB	GOLF BRAVO (CALL SIGN) (CJTFME)
GFCS	GUN FIRE CONTROL SYSTEM MK 86
GFCSS	GUN FIRE CONTROL SYSTEM SUPERVISOR
GLO	GUNNERY LIAISON OFFICER
GMLS	GUIDED MISSILE LAUNCHING SYSTEM MK 26
GOO	GULF OF OMAN

GOSP	GAS OIL SEPARATION PLANT
GQ	GENERAL QUARTERS
GRS	GRID REPORTING SYSTEM
GS	GOLF SIERRA (CALL SIGN) (COMDESRON 25, ON USS HANCOCK)
GW	GOLF WHISKEY (CALL SIGN) (USS VINCENNES)
GWS	GUN WEAPON SYSTEM
HE	HIGH EXPLOSIVE
HEMT	HIGH EXPLOSIVE MECHANICAL TIME FUSE
HIFR	HELICOPTER INFLIGHT REFUELING
HVU	HIGH VALUE UNIT
HWS	HARPOON WEAPON SYSTEM
IATA	INTERNATIONAL AIR TRAFFIC ASSOCIATION
ICAO	INTERNATIONAL CIVILIAN AVIATION ORGANIZATION
IAD	INTERNATIONAL AIR DEFENSE
ID	IDENTIFICATION
IDS	IDENTIFICATION SUPERVISOR
IFF	IDENTIFICATION FRIEND OR FOE (SYSTEM)
INSURV	INSPECTION AND SURVEY
IR	INFRARED
ISD	INITIAL SEARCH DEPTH
JEWC	JOINT ELECTRONIC WARFARE CENTER
JDF	JAMMING DIRECTION FINDER
JOOD	JUNIOR OFFICER OF THE DECK
K/FT	THOUSAND FEET
KTS	KNOTS
K/YDS	THOUSAND YARDS
LAAWC	LOCAL ANTIAIR WARFARE COORDINATOR
LAC	LAMPS AIR COMMANDER
LAMPS	LIGHT AIRBORNE MULTIPURPOSE SYSTEM
LAT/LONG	LATITUDE/LONGITUDE
LNCHR	LAUNCHER
LOB	LINE OF BEARING
LSD	LARGE SCREEN DISPLAY
MAD	MILITARY AIR DISTRESS
MAF	MARINE AMPHIBIOUS FORCE
MARPAT	MARITIME PATROL
MARREP	MARITIME REPORT
MADVECS	MAGNETIC ANOMALY DETECTOR VECTORS
MAX	MAXIMUM
MEFEX	MIDEAST FORCE EXECUTION NET
MERCH	MERCHANT
MIDEASTFOR	MIDDLE EAST FORCE
MODE I	MILITARY AIRCRAFT (NON-SWITCHABLE IN AIR)
MODE II	MILITARY AIRCRAFT (NOT SELECTABLE IN AIR)
MODE III	CIVILIAN AIRCRAFT
MODE IV	MILITARY AIRCRAFT (NOT SELECTABLE IN AIR)
MONT	USS MONTGOMERY
MPA	MAIN PROPULSION ASSISTANT
MSS	MISSILE SYSTEM SUPERVISOR
MT	MOUNT
MTI	MOVING TARGET INDICATOR
MV	MOTOR VESSEL
N	NORTH
N PLOT	NORTH PLOTTER

NAV	NAVIGATION SYSTEM
NC	NET CONTROL
NCS	NET CONTROL STATION
NCU	NET CONTROL UNIT
NGFS	NAVAL GUN FIRE SUPPORT
N/NE	NORTH BY NORTHEAST
NOTACK	NO ATTACK
NOTAM	NOTICE TO AIRMEN
NOTMAR	NOTICE TO MARINERS
NTDS	NAVAL TACTICAL DATA SYSTEM
OL	OCEAN LORD
OOD	OFFICER OF THE DECK
OPDEC	OPERATIONAL DECEPTION
OPREP	OPERATIONS REPORT
ORTS	OPERATIONAL READINESS TEST SYSTEM MK 1
OTH	OVER THE HORIZON
OTST	OVER-THE-SIDE TORPEDO
PB	PATROL BOAT
PD	POINT DATA
PEC	PASSIVE EQUIPMENT CABINET
POA&M	PLAN OF ACTION & MILESTONES
PG	PERSIAN GULF
PROP	PROPELLER
RBL	RANGE & BEARING LAUNCH
RCP	REMOTE CONTROL PANEL
RCS	RADAR CROSS-SECTION
RCVD	RECEIVED
RDP	RADAR DIGITAL PLOTTER
READEX	READINESS EXERCISE
REFTRA	REFRESHER TRAINING
REMRO	REMOTE RADAR OPERATOR
RM	RADIO MONITOR
ROE	RULES OF ENGAGEMENT
ROS	REMOTE OPTICAL SIGHT
RPS	RADAR PICKETT STATION
RT	RADIOTELEPHONE
RTN	RETURN
RVP	RADAR VIDEO PROCESSING
S PLOT	SOUTH PLOTTER
SAG	SURFACE ACTION GROUP
SAM	SURFACE-TO-AIR MISSILE
SAP	SHIP'S ATTACK PROFILE
SAU	SURFACE ACTION UNIT
SHF	SUPER HIGH FREQUENCY
SHM	SHIP HEADING MARKER
SITREP	SITUATION REPORT
SIWO	SIGNALS INTELLIGENCE WARFARE OFFICER
SM	STANDARD GUIDED MISSILE
SM2 BLK 2	STANDARD GUIDED MISSILE, BLOCK 2
SO	SONOR OPERATOR
SOHWPA	STRAIT OF HORMUZ WESTERN PATROL AREA
SOP	STANDARD OPERATING PROCEDURES
SP	SOUND POWER
SPD	SPEED

SPY-1A	RADAR SYSTEM AN/SPY-1A
SRC	SURFACE RADAR COORDINATOR
SSES	SHIP'S SIGNAL EXPLOITATION SPACE
SSSC	SURFACE/SUBSURFACE SURVEILLANCE COORDINATOR
SSSS (SNAKE)	SURFACE/SUBSURFACE SURVEILLANCE SUPERVISOR
SSWC	SURFACE/SUBSURFACE WARFARE COORDINATOR
SSWS	SURFACE/SUBSURFACE WARFARE SUPERVISOR
STC	SENTIVITY TIME CONTROL
STD MSL	STANDARD MISSILE
STO	SYSTEM TEST OFFICER
SUCAP	SURFACE COMBAT AIR PATROL
SURFPAC	SURFACE FORCE PACIFIC
SVCS	SERVICES
TACCOM	TACTICAL COMMUNICATIONS
TACAN	TACTICAL AIR NAVIGATION
TACON	TACTICAL CONTROL
TAO	TACTICAL ACTION OFFICER
TC	TACTICAL COMMAND
TDS	TACTICAL DATA SYSTEM
TF	TASK FORCE
TG	TASK GROUP
TIC	TACTICAL INFORMATION COORDINATOR
TN	TRACK NUMBER
TRKS	TRACKS
TS	TRACK SUPERVISOR
UBS	UNDERWATER BATTERY SUPERVISOR
UFCS	UNDERWATER FIRE CONTROL SYSTEM MK 116
UHF	ULTRA HIGH FREQUENCY
UNITREP	UNIT REPORT
USDAO	UNITED STATES DEFENSE ATTACHE' OFFICES
USLO	U.S. LIAISON OFFICES
VAB	VARIABLE ACTION BUTTON
VCN	USS VINCENNES
VECTACS	VECTOR ATTACK
VIC	VICINITY
VLAD	VERTICAL LINE ARRAY DIFAR
VTF	VARIABLE TIME FUSE
W	WEST
WCCO	WEAPON CONTROL CONSOLE OPERATOR
WCIP	WEAPON CONTROL INDICATOR PANEL
WCO	WEAPON CONTROL OFFICER
XO	EXECUTIVE OFFICER