

"BUILDING A NAVY: TODAY AND TOMORROW"

BY ADMIRAL FREDERICK H. MICHAELIS, USN
CHIEF OF NAVAL MATERIAL

TO THE CURRENT STRATEGY FORUM
U.S. NAVAL WAR COLLEGE
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INITIALLY, I WISH TO COMPLIMENT THE SECRETARY OF THE NAVY
FOR SPONSORING THIS FORUM AND THE NAVAL WAR COLLEGE FOR ITS
PART IN ITS EXECUTION. CERTAINLY ANY NATION AND ITS NAVY ARE
WELL-SERVED BY INCREASED PERSONAL CONTACT AND DIALOGUE.
BROADENED PUBLIC UNDERSTANDING OF THE NAVY'S CHALLENGES AND
THE PART THE NAVY PLAYS IN SUPPORT OF THE NATIONAL STRATEGY
WILL MAKE MORE LIKELY A PROPER AND USEFUL BALANCE OF FORCES FOR
FOR THE 21ST CENTURY.

FOR MY OWN SMALL PART /

FOR MY OWN SMALL PART / IN THIS FORUM, I INTEND TO BUILD UPON THE PRESENTATIONS OF THOSE WHO HAVE PRECEDED ME.

YESTERDAY MORNING, THE SECRETARY OF THE NAVY OUTLINED THE ROLE OF THE U.S. NAVY IN SUPPORTING NATIONAL STRATEGY. THIS MORNING, THE UNDER SECRETARY OF THE NAVY CARRIED THOSE IDEAS FURTHER BY INDICATING SOME OF THE MEANS WE USE IN PLANNING NAVAL FORCES TO IMPLEMENT THAT STRATEGY. THIS AFTERNOON, THE VICE CHIEF OF NAVAL OPERATIONS OFFERED HIGHLIGHTS OF THE MANY CHALLENGES FACED BY TODAY'S U.S. NAVY IN BRINGING THAT PLANNING INTO BEING. THIS EVENING, I PROPOSE TO ZERO IN ON ONE OF THE KEY CHALLENGES CONFRONTING ANY NAVY TODAY OR TOMORROW -- DEVELOPING AND BUILDING THE WARSHIPS AND AIRCRAFT THAT COMPRISE A MODERN FLEET.

IN A WORD, /

IN A WORD, / MY PREDECESSORS HAVE PROVIDED THE CONCEPTS,
THEORIES, STRATEGIES, AND PLANS -- I AM GOING TO GET INTO THE
PROBLEMS OF EXECUTION. WE MAY HAVE TO ROLL UP OUR SLEEVES
AND GET SOME GREASE ON OUR ELBOWS.

IN ADDRESSING THAT TOPIC, I INTEND TO CONSIDER BRIEFLY THE
FUNCTIONAL NEEDS OF A WARSHIP, SOME DESIGN CHARACTERISTICS
AFFECTING A WARSHIP, AND A FEW ASPECTS OF LIFE CYCLE COSTING.
FINALLY, I WILL DISCUSS MANAGEMENT IMPROVEMENTS IN THE AREA
OF SHIPBUILDING CLAIMS.

AS YOU KNOW /

AS YOU KNOW, / OUR NAVAL MISSION IS TO PROVIDE PROMPT,
SUSTAINED COMBAT OPERATIONS AT SEA THROUGHOUT THE WORLD
WHENEVER NEEDED. MY POSITION AS THE CHIEF OF NAVAL
OPERATIONS' PRIMARY EXECUTIVE FOR PROVIDING AND MAINTAINING
MATERIAL RESOURCES FOR PROMPT AND SUSTAINED COMBAT AT SEA
TRANSLATES INTO A VERY BROAD TASK OF MATERIAL DEVELOPMENT,
CONSTRUCTION, MODERNIZATION, AND MAINTENANCE.

LET'S LOOK AT THE SCOPE./

LET'S LOOK AT THE SCOPE. / OUR NAVAL WARSHIPS SPAN
THE SPECTRUM FROM SMALL HYDROFOIL PATROL CRAFT TO MASSIVE
AIRCRAFT CARRIERS. AND THE KEYSTONE IN THIS VARIETY IS BALANCE
-- A BALANCE CONTINUALLY UNDER DEEP SCRUTINY BY BOTH THE CNO
AND THE SECRETARY OF THE NAVY. NEARLY ALL OUR SHIPS ARE MULTI-
MISSION -- A FACT OF INESTIMABLE VALUE TO VERSATILITY IN
TASK FORCE COMPOSITION, AND THIS HELPS CONCENTRATE THE REQUIRED
CAPABILITIES AT THE RIGHT POINTS IN PLACE AND TIME ON ONE
HAND, AND OF GREAT CHALLENGE TO OUR DESIGNERS AND BUILDERS
ON THE OTHER.

FROM THE VIEWPOINT /

FROM THE VIEWPOINT / OF THE TECHNOLOGIST AND LOGISTICIAN,
OUR NAVY INCLUDES ITS OWN ARMY AND AIR FORCE AS WELL AS THE
VARIOUS PLATFORMS REQUIRED SPECIFICALLY AT SEA. THESE
FORCES OPERATE IN ALL MEDIA: ON, UNDER, AND OVER WATER; IN
AIR AND SPACE; AND ON AND OVER LAND. CLEARLY, THE U.S. NAVY
MUST BE MORE TECHNOLOGICALLY-INTENSIVE THAN ANY OF THE OTHER
MILITARY SERVICES. THE SEA MAKES CEASELESS DEMANDS ON THOSE
NATIONS FORTUNATE ENOUGH TO EXPLOIT THE OCEANS IN SUPPORT OF
NATIONAL STRATEGY, AS ALL GREAT POWERS MUST. THOSE DEMANDS
ARE FOR ME A CONTINUING CHALLENGE.

READY NAVAL FORCES /

READY NAVAL FORCES / MUST STAY AT SEA FOR LONG PERIODS.

THEY MOVE IN A BED OF SALT WITH A LITTLE WATER MIXED IN. BOTH
MEN AND MACHINES MUST CONTINUE TO WORK RELIABLY DESPITE CONSTANT
EXPOSURE TO SALT-WATER AND THE EVER-PRESENT MOTIONS OF ROLL,
PITCH, HEAVE, HOG AND SAG.

THE INTERNAL VOLUME OF WARSHIPS IS FIXED. LEAN TO'S CANNOT
BE CONSTRUCTED TO CORRECT SPACE SHORTFALLS DISCOVERED DURING
OPERATIONAL USE. A SHIP'S INTERNALS MUST PROVIDE FOR MAXIMUM
MISSION EFFECTIVENESS, WHILE AT THE SAME TIME ACCOUNTING FOR
THE NEEDS OF MEN WHO MUST LIVE IN CLOSE PROXIMITY FOR LONG
PERIODS.

OUR CARRIER AIRCRAFT MUST BE /

OUR CARRIER AIRCRAFT MUST BE / DESIGNED TO OPERATE OFF
FLOATING AIRFIELDS THAT ARE COMPARATIVELY SMALL -- THIS
NECESSITATING UNIQUE CHARACTERISTICS. WE AUGMENT THRUST FOR
TAKE-OFF WITH CATAPULTS; WE ABSORB ENERGY THROUGH ARRESTMENT;
AND WE FOLD WINGS TO SAVE SPACE. WE MUST DESIGN FROM SCRATCH
TO ENSURE THESE AIRCRAFT CAN MEET THE STRESSES OF CARRIER
OPERATIONS.

MOREOVER, BOTH THE SHIPS /

MOREOVER, BOTH THE SHIPS / AND AIRCRAFT THAT COMPRISE
NAVAL FORCES MUST BE EQUIPPED FOR RESUPPLY AT SEA -- MOST
COMMONLY AT GREAT DISTANCES FROM REGULAR SUPPLY SOURCES,
AND FREQUENTLY UNDER ADVERSE WEATHER CONDITIONS. FINALLY,
ALL WARSHIPS AND AIRCRAFT MUST BE DESIGNED WITH GROWTH
CAPABILITY TO PERMIT RE-EQUIPPING DURING THEIR LIFETIMES WITH
UPDATED WEAPON AND SUPPORT SYSTEMS IN ORDER TO COPE WITH
INCREASING ENEMY SOPHISTICATION AND TO ASSURE AN
ECONOMICALLY LONG AND USEFUL LIFE.

NEXT THERE IS THE QUESTION OF /

NEXT THERE IS THE QUESTION OF / FLEXIBILITY. SINCE MAN
FIRST RODE DOWN A RIVER ON A LOG; THE CALL FOR GREATER PLATFORM
FLEXIBILITY HAS INCREASED EACH CENTURY -- AND, SINCE THE
INDUSTRIAL REVOLUTION, HAS INCREASED WITH EACH DECADE. SO
HAS THE SOPHISTICATION OF WEAPONRY. BUT UNLIKE FLEXIBILITY,
SOPHISTICATION IS NOT SOUGHT; IT IS DRIVEN BY THREAT.
SOPHISTICATION STRAINS FOR EVER-INCREASING TECHNOLOGY.

JOINING SOPHISTICATION AND FLEXIBILITY WITH MODERN WEAPONRY
AND VERSATILITY IN A SHIP THAT WILL LAST 25 TO 30 YEARS IN A
SEA ENVIRONMENT PLACES HEAVY RESPONSIBILITY ON TODAY'S
DECISION MAKERS.

LET ME EMPHASIZE /

MAJOR WARSHIP BECOMES THE CONFLUENCE OF MANY ADVANCED DEVELOPMENTS. ON OUR DRAWING BOARDS, FOR INSTANCE, ARE PLANS CALLING FOR A WARSHIP WHICH WILL BRING TOGETHER ADVANCED SONAR AND THE LAMPS HELICOPTER ANTI-SUBMARINE WARFARE SYSTEMS, OFFENSIVE WEAPON SYSTEMS INCLUDING THE TOMAHAWK CRUISE MISSILE AND THE HARPOON WEAPON SYSTEM, AND DEFENSIVE WEAPON SYSTEMS SUCH AS THE PHALANX CLOSE-IN WEAPON SYSTEM AND THE AEGIS COMBAT SYSTEM ALONG WITH THE STANDARD MISSILE. EACH OF THESE SEVEN SYSTEMS IS A MAJOR WEAPON DEVELOPMENT IN ITS OWN RIGHT. YET ALL MUST FIT TOGETHER IN TERMS OF THE CONSTRUCTION PROCESS OF A SINGLE WARSHIP. AND ALL MUST BE INTEGRATED SO AS TO WORK IN PERFECT HARMONY -- AND HARMONY OF BOTH HARDWARE AND SOFTWARE. IN A PHRASE, COMBATANT SHIPBUILDING IS A CONTINUUM OF SYSTEMS INTEGRATION.

NOW, LET ME /

NOW, LET ME / FOCUS ON ONE CONSIDERATION OFTEN MISUNDERSTOOD
IN WARSHIPS -- SURVIVABILITY. FIRST LET ME NOTE THAT
SURVIVABILITY MUST BE EXPRESSED IN A COMPARATIVE SENSE. THERE
IS NO SUCH THING AS ABSOLUTE SURVIVAL IN WARTIME. FUNDAMENTALLY,
FIXED-TARGETS ARE LESS LIKELY TO SURVIVE THAN MOVING TARGETS;
AND MOVING, HIDDEN TARGETS ARE THE MOST SURVIVABLE. THE ENEMY
WILL MAKE A JUDGMENT AS TO HOW HE EMPLOYS HIS RESOURCES. HE
WILL TARGET MOST HEAVILY THOSE FORCES WHICH HE PERCEIVES TO BE
HIS MAJOR THREAT. OUR SHIPS AND SUBMARINES APPEAR TO BE HIGH
IN THE SOVIET THREAT LIST. SO SURVIVABILITY CONSIDERATIONS --
BOTH ACTIVE AND PASSIVE ARE IMPERATIVE IN OUR SHIP DESIGNS.
ACTIVE SHIP SELF-DEFENSE IN TERMS OF POINT AND CLOSE-IN AREA
DEFENSE WILL NEED CONTINUOUS UPGRADING.

TODAY, THESE SYSTEMS /

TODAY, THESE SYSTEMS / INCLUDE: VULCAN PHALANX, TARTAR,
TERRIER, THE STANDARD MISSILE, AND THE ANTI-MISSILE CAPABILITY
OF THE F-14 PHOENIX MISSILE. TOMORROW'S UPGRADING WILL INCLUDE:
AEGIS AND THE ADVANCED STANDARD MISSILE. OUR SHIP CONSTRUCTORS
ARE ALSO MINDFUL OF THE IMPORTANCE OF PASSIVE DEFENSE -- HOW
WELL THE SHIP CAN ABSORB DAMAGE AND CONTINUE ON ITS ASSIGNED
MISSION.

OPTIMIZING PASSIVE DEFENSE /

OPTIMIZING PASSIVE DEFENSE / PROTECTION REQUIRES MANY
JUDGMENTS. FOR INSTANCE, WHERE DO WE LOCATE A SHIP'S MAGAZINE?
SURFACE THREATS DICTATE IT BE LOCATED BELOW THE WATERLINE IN
ORDER TO TAKE ADVANTAGE OF THE INHERENT PROTECTION OFFERED
BY THE SEA. YET THE SUBSURFACE THREATS POSED BY TORPEDOES
AND MINES URGE US TO LOCATE THE MAGAZINE TOPSIDE. THUS, IT IS
ESSENTIAL WE CONSIDER THE TOTAL THREAT IN RELATION TO THE
SHIP'S MISSIONS IN DEVELOPING EACH WARSHIP'S PROTECTION CONCEPT.

AS FOR AIRCRAFT, A SALIENT GOAL /

OR DISPERSION. RECENT STUDIES HAVE CONCLUDED THAT NO MATTER
WHAT SCENARIO WE ARE FIGHTING, THE PRESENCE OF V/STOL AIRCRAFT
MAKE THE USE OF SEA-BASED AVIATION DECKS MORE EFFECTIVE THAN
IS THE CASE WITH CONVENTIONAL FIXED-WING AIRCRAFT ONLY. CURRENTLY,
WE ARE MOVING DELIBERATELY, BUT POSITIVELY, IN THE DIRECTION
OF VERTICAL/SHORT TAKE-OFF AND LANDING AIRCRAFT DEVELOPMENT,
THIS ON A TIME SCHEDULE THAT WILL PERMIT REPLACEMENT OF
CONVENTIONAL FIXED-WING AIRCRAFT AS THE LATTER REACH THE
END OF SERVICE LIFE. IN WORK TOWARD NEW MODELS OF V/STOL,
WE HAVE ESTABLISHED MILESTONES TO CHECK PROGRESS AGAINST REQUIRED
DATES FOR REPLACEMENT -- IN ORDER TO KEEP CONVENTIONAL
FIXED-WING OPTIONS OPEN IF LESS THAN THE REQUIRED TECHNOLOGICAL
PROGRESS IS EXPERIENCED.

WHILE WE ARE /

WHILE WE ARE / FACED WITH THE NECESSITY TO MAKE STRONG
PULLS ON TECHNOLOGY TO COUNTER AN INCREASINGLY ADVANCED THREAT,
WE ARE CONSTANTLY LOOKING TOWARD SIMPLICITY AS AN ANECDOTE
TO SOPHISTICATION IN ACQUIRING OUR SYSTEMS FOR THE FUTURE.
THE END GAME IS IMPROVED READINESS AND NECESSARY PERFORMANCE TO
OVERCOME THE THREAT AT THE LOWEST POSSIBLE LIFE CYCLE COST.
SUCH EFFORTS INCLUDE DEVELOPMENT OF STRAIGHT FORWARD, VERTICAL
MISSILE LAUNCH TUBES TO REPLACE HIGH COST AND COMPLICATED
SURFACE TO AIR MISSILE LAUNCHERS. WE ALSO ARE INCREASING
EMPHASIS ON SHIP MODULARIZATION. IN OUT YEARS WE SHOULD SEE MORE
PREPLANNED CAPABILITY TO REPLACE WEAPON SUITS AT MID-LIFE OF
THE SHIP BY ADVANCED SYSTEMS CONFIGURED FOR THE SAME SPACE AND
UTILITY SYSTEM SUPPORT HOOK-UPS OF THE SYSTEM BEING REPLACED.

RECOGNIZING A SHRINKING /

RECOGNIZING A SHRINKING / MANPOWER BASE, WE WILL SEEK BY SHIP DESIGN TO REDUCE THE SIZE OF CREWS MANNING OUR SHIPS -- SOME BENEFITS CAN BE EXPECTED THROUGH AUTOMATION. WE HAVE A START IN THE AUTOMATIC PROPULSION SYSTEM IN THE LHA, SPRUANCE CLASS DESTROYER, AND THE FRIGATE CLASS, OLIVER HAZARD PERRY. WE HAVE LEARNED A LOT ABOUT THE SYSTEMS APPROACH IN THIS AREA THAT CAN BE APPLIED IN THE FUTURE.

WITH REGARD TO /

WITH REGARD TO / REDUCTION OF LIFE CYCLE COSTS IN OPERATIONS AND SUPPORT, WE HAVE A GOOD START THROUGH IMPROVED RELIABILITY AND STANDARDIZATION. TO MAXIMIZE READINESS AND REDUCE COSTS WE KNOW THAT RELIABILITY MUST BE INCORPORATED AT THE "FRONT END," IT MUST BE DESIGNED INTO THE SYSTEM, AND RELIABILITY MUST BE DEMANDED BY SPECIFICATION RATHER THAN AS A GOAL. WE HAVE A LONG WAY TO GO, BUT I BELIEVE INDUSTRY KNOWS WE MEAN BUSINESS. THE F-18, AND THE TRIDENT ARE STARTING EXAMPLES OF TOTAL SYSTEMS APPROACH TO RELIABILITY. A COROLLARY TO RELIABILITY IS STANDARDIZATION. AFTER DEVELOPMENT OF A RELIABLE PRODUCT, ITS STANDARDIZATION WILL KEEP TOTAL LIFE CYCLE LOGISTICS COSTS TO A MINIMUM. THE FFG BUY HIGHLIGHTS OUR EFFORTS IN STANDARDIZATION. BATH IRON WORKS, BUILDER OF THE LEAD SHIP, NOT ONLY BOUGHT EQUIPMENT FOR OLIVER HAZARD PERRY, BUT IT ALSO WAS REQUIRED TO SOLICIT OPTIONS OF EQUIPMENT FOR THE 30 FOLLOW ON SHIPS WHICH ARE BEING

BUILT AT THREE SHIPYARDS. THIS HAS ENSURED THAT EACH SHIP --
NO MATTER WHERE BUILT -- IS STANDARDIZED IN MAJOR EQUIPMENT AREAS.

THESE FACTORS MAKE SHIP ACQUISITION A VERY COMPLEX
PROCESS. WE MUST BE CONSTANTLY VIGILANT TO AVOID THE PITFALLS
IN THE MANAGEMENT OF SHIPBUILDING THAT HAVE PLAGUED US IN
THE PAST DECADE.

CONSEQUENTLY, WE HAVE TAKEN /

CONSEQUENTLY, WE HAVE TAKEN / MAJOR INITIATIVES TO
PREVENT OR MINIMIZE SHIPBUILDING CLAIMS THROUGH IMPROVED
MANAGEMENT:

(1) THE NAVY SHIP PROCUREMENT PROCESS STUDY, UNDER THE
DIRECTION OF SECRETARY HIDALGO, INCLUDED A GREAT DEAL OF
SHIPBUILDER PARTICIPATION. IT WILL PROVIDE A THOROUGH
ASSESSMENT OF NAVAL SHIP ACQUISITION POLICIES AND RECOMMEND
CHANGES FOR THE FUTURE.

(2) ONE OF OUR MOST SIGNIFICANT IMPROVEMENTS HAS BEEN A
REVISED SHIPBUILDING ESCALATION PROVISION. IT PROVIDES A MORE
EQUITABLE ALLOCATION OF RISK THAN WAS PREVIOUSLY PROVIDED IN
SHIPBUILDING CONTRACTS.

WE ARE IMPLEMENTING /

(3) WE ARE IMPLEMENTING / SPECIFIC IMPROVEMENTS TO STRENGTHEN OUR COST ESTIMATING PROCESS BASED ON A STUDY OF NAVAL SHIP ACQUISITION COST ESTIMATING WHICH IDENTIFIED THE CAUSES OF COST GROWTH AND ASSESSED THE NAVY'S ESTIMATING CAPABILITIES.

(4) WE HAVE INCREASED THE CONSTRUCTION INTERVAL BETWEEN THE LEAD SHIP OF A CLASS AND THE FIRST FOLLOW SHIP SO THAT COMPLETION OF WORK ON THE LEAD SHIP WOULD PERMIT FEEDBACK AND RESOLUTION OF PROBLEM AREAS PRIOR TO CONSTRUCTION OF FOLLOW SHIPS.

(5) COST TYPE CONTRACTS WILL BE USED IN MOST CASES FOR THE COMBINED DETAILED DESIGN AND CONSTRUCTION OF THE LEAD SHIP TO REDUCE THE SHIPBUILDER'S COST RISK.

(6) WE EXPECT THE NAVY CLAIMS SETTLEMENT BOARD TO PROVIDE TIGHTER CLAIM WRITING PROCEDURES IN COUPLING CAUSE AND EFFECT.

LAND BASED TEST SITES /

(7) LAND BASED TEST SITES / ARE BEING, AND WILL BE USED TO RESOLVE WEAPON SYSTEM-TO-SHIP INTEGRATION PROBLEMS PRIOR TO SHIP INSTALLATION.

(8) "LESSONS LEARNED" HAVE BEEN DEVELOPED ON EACH CLAIM SETTLED AND HAVE PROVIDED THE BASIS FOR TRAINING SESSIONS.

(9) PROGRAMS TO IMPROVE DELIVERY OF GOVERNMENT FURNISHED EQUIPMENT AND MATERIAL HAVE BEEN INITIATED.

(10) WE HAVE ESTABLISHED FULL TIME CLAIMS PREVENTION PROGRAMS AT MAJOR SHIPBUILDING SITES.

(11) CLAIMS ADJUDICATION CLAUSES IN CONTRACTS TO ENSURE POTENTIAL PROBLEMS ARE REPORTED AND ACTED UPON IN A TIMELY MANNER HAVE BEEN DEVELOPED.

BIC
BUT, AS A FACTOR /
A

BUT AS BIG A FACTOR / AS ANY CAN BE SUMMED UP IN ONE
WORD -- ATTITUDE. DURING THE PAST SEVERAL YEARS, WE HAVE DEVELOPED
A MINUTEMAN ATTITUDE THAT MEANS THAT THE NAVY TEAM IS DETERMINED
TO REACT QUICKLY TO PROBLEMS AS THEY ARISE IN THE SHIPBUILDING
AREA TO PREVENT DEVELOPMENT OF A CLAIM GENERATING ENVIRONMENT.
ALSO THERE IS NO GUARANTEE WE CAN AVOID CLAIMS COMPLETELY.
OUR LINGERING EXPERIENCE WITH MAJOR CLAIMS IS LIE MOVING THROUGH
THE GREAT DEPRESSION -- ONCE YOU HAVE EXPERIENCED IT YOU WILL
NEVER FORGET THE PAINFUL LESSONS LEARNED.

WHAT WE NEED NOW /

WHAT WE NEED NOW / IS A STABLE LONG TERM SHIPBUILDING PROGRAM THAT PROVIDES OUR COUNTRY THE REQUIRED COMBATANT SHIP ASSETS TO SUPPORT NATIONAL STRATEGY AT THE SAME TIME PROVIDE THE SHIPBUILDING INDUSTRY A RATIONAL PROGRAM THAT PROMOTES MANPOWER AND DOLLAR SAVINGS. WE KNOW HOW TO DESIGN, CONTRACT FOR AND BUILD SHIPS, AND WE ARE DOING IT. IN 1977 WE ACCEPTED 12 SHIPS, OF WHICH 5 WERE NUCLEAR PROPELLED. THIS YEAR WE EXPECT TO DELIVER 16 SHIPS, OF WHICH 5 WILL BE NUCLEAR PROPELLED. ADDITIONALLY, WE WILL DELIVER 4 MINE SWEEPERS TO OUR ALLIES THROUGH THE DEFENSE SECURITY ASSISTANCE PROGRAM.

OUR EFFORTS ARE AIMED AT PROVIDING THE BEST POSSIBLE PRODUCT TO SUPPORT THE NEEDS OF U.S. STRATEGY IN COPING WITH MILITARY THREATS TO OUR NATIONAL INTEREST CONSISTENT WITH HIGH READINESS AND LOWEST LIFE CYCLE COSTS.