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**Finding**

Reducing mission-cycle time is the key to quick and decisive victory, and yet the C4ISR contribution to mission-cycle time is not now being actively managed in all mission areas.

The value of C4ISR to naval strike groups can be best measured in terms of end-to-end mission-cycle time, from the composition of strike groups, to mission planning and intelligence preparation of the battlefield, through F2T2EA. It is observed that ISR is not treated as part of the kill chain in all mission areas. The air defense and ballistic missile defense missions are positive examples—the C4ISR for these systems is built as an integral element of the fire-control loop, in Aegis, Aegis with CEC, and the SSDS.

Mission-cycle time is directly tied to adequate ISR coverage (more coverage gives more time to respond), to the accuracy and precision of ISR (for a faster fix on targets), and to the automation of ISR data analysis and correlation (for faster target identification), the communication latency of ISR information, and on how clearly the information is displayed (for faster decision time). Mission-cycle time is not managed in missions other than those mentioned, except for a few single-platform systems such as submarines and F-18s on patrol. New, end-to-end systems engineering and integrated acquisition programs are required in these warfare systems, for example, in PEO(IWS) for air defense systems.

**Recommendation**

To reduce mission-cycle time all areas of C4ISR much be managed meticulously to ensure the information being provided is up to date and accurate as information is highly perishable. This requires assets to be distributed efficiently to ensure the area in which the mission is taking place is well covered and information is being sent back to tacticians for mission planning. This requires end-to-end latency to be sufficiently short[1] as to keep the data from becoming less useful by the time the data is received by a tactician. These systems should also be expanded upon regularly if the mission-cycle time is to shorten by any significant length. This requires investment to increase the quantity and/or the capability of the components that make up the C4ISR system[2].

To continue mission-cycle time reduction the proper steps must be made within the ISR components of the mission preparation. With the starting time of most engagements taking anywhere from tens of minutes to about an hour[3] decreasing these times further will prove to be a challenge. Though with the integration of cooperative engagement capability (CEC) the time a ship has to respond to a threat is greatly increased. The radar capabilities of an E-2C extend the ship’s own radar capabilities to 400 miles[4] around the vessel. This allows for a ship to intercept any incoming threats from a much further distance than it was previously capable of. So with the implementation of CEC systems and newly developed systems the ISR components of any strike group can be improved upon. This allows for a greater area to be covered when more than one source of information collaborates with another.

**Appendix**

[1] C4ISR for Future Naval Strike Groups, 58

[2] C4ISR for Future Naval Strike Groups, 43

[3] C4ISR for Future Naval Strike Groups, 48

[4] <https://en.wikipedia.org/wiki/Northrop_Grumman_E-2_Hawkeye>