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COMMANDER NAVY INSTALLATIONS COMMAND
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CNICINST 11100.1A
N4
29 May 2018

CNIC INSTRUCTION 11100.1A

From: Commander, Navy Installations Command

Subj: MISSION DEPENDENCY INDEX

Ref: (a) OPNAVINST 3500.39C
(b) DoD Directive 7730.65 of 3 June 2002

Encl: (1) Installation Mission Dependency Index Survey
(2) Installation Point of Contact (IPOC) Responsibilities and Qualifications

1. Purpose. To publish guidance and procedures for implementation and use of the Mission Dependency Index (MDI) as an Operational Risk Management system in compliance with reference (a) and in support of the requirements in reference (b).

2. Cancellation. CNICINST 11100.1.

3. Scope and Applicability. This instruction applies to all CNIC Headquarters and Regions.

4. Background

a. The MDI is an operational risk metric describing the relative importance of shore facilities in terms of their mission criticality. MDI evaluates the installation's ability to support the Warfare Enterprise's mission should the infrastructure be damaged or destroyed. Inputs from operations personnel and tenant subject matter experts on the MDI process is required to best capture the operational mission impacts of facility degradation or outage. MDI is reported on a scale of 1 to 100 with 100 representing highest mission importance.

b. The MDI program was developed in 2001, to ensure limited resources are prioritized and allocated properly. Deployed in 2005, the MDI program is funded by the CNIC HQ Facilities and Environmental (N4), who executes it via Naval Facilities Engineering Command (NAVFAC).

5. Policy. MDI survey assessments of individual installations are conducted on a five-year cycle.

a. MDI surveys will be conducted without regard to Maintenance Unit Identification Codes (MUIC) and should include all facilities at each installation and at all geographically separated

sites aligned to a CNIC primary installation. When it is not practical to travel to a remote geographically separated site, survey teams may base the MDI ratings on input from the Installation Point of Contact (IPOC) and other relevant Functional Managers. Completed MDI surveys, program information and survey schedules are maintained on the NAVFAC MDI portal page <https://hub.navfac.navy.mil/webcenter/portal/pw/Facilities+Mgmt+&+Sustainment++/PW5-MDI++>.

(1) The MDI survey addresses four questions for each facility. The first two address interdependency within a mission area, which is the criticality of the facility to the mission it serves. The final two address interdependency between mission areas, which is the criticality of the facility to other missions. The questions and scoring process are outlined in enclosure (1).

(2) The phases of a MDI survey are:

(a) Phase I: Identify an IPOC and conduct pre-survey coordination. The IPOC plays a key role in ensuring a full and complete MDI survey. The IPOC roles and responsibilities are discussed in greater detail in enclosure (2).

(b) Phase II: The MDI Survey Team In-brief and Overview. When the survey team arrives at the installation an in-brief will be provided to the Commanding Officer (CO), department heads and key tenant staff. This brief familiarizes the installation leadership team with the MDI survey process and provides the survey teams' plan of actions and milestones.

(c) Phase III: MDI Report Preparation and Survey Activities. The survey team meets with installation and tenant staff representatives to determine the answers to the four questions outlined in enclosure (1) and calculate MDI scores for each facility.

(d) Phase IV: MDI Report Staffing and Record Updates. The survey team compiles the MDI score report for each installation and routes them to CNIC (N4). CNIC (N4) staffs the report for review and comment through the installation, the Region, CNIC asset management and CNIC Warfare Enterprise Action Officers. Upon reconciliation of comments, CNIC (N4) directs NAVFAC PW to update the installation MDI scores internet Navy Facilities Asset Data Store (iNFADS).

b. Standard MDI Scores. Facilities with specific category code numbers (CCN) may be assigned a specific MDI score by the CNIC/NAVFAC team. The use of standard scores for more common support facilities with low mission impact allows concentrated evaluation efforts on facilities with increased impact. A list of CCNs to receive a standard MDI score is maintained on the NAVFAC MDI Portal Page. The list of CCNs receiving standard scores is reviewed annually by NAVFAC, and recommendations for update provided to CNIC (N4) for approval.

c. Out of Survey Cycle MDI Score Change Requests. Instructions to request and submit MDI score changes for consideration in between normal survey cycles are maintained on the

NAVFAC Portal and on the CNIC G2 under the CNIC (N4) Team site. The Region may request changes to facility MDI scores (either up or down) when the:

(1) Mission of the facility has materially changed since the last MDI survey.

(2) Facility does not have an MDI score for any reason (i.e. new MILCON, facility missed on last survey, new assets transferred to the installation).

6. Responsibilities

a. CNIC (N4) is responsible for:

(1) Sponsoring and funding the MDI program on an annual budget basis.

(2) Approving and issuing guidance to the Regions, as required, and to maintain MDI program assurance.

(3) Reconciling MDI survey team report with comments provided by Region and installation staff.

(4) Authenticating MDI scores and directing NAVFAC PW to publish MDI scores.

(5) Reviewing and approving or disapproving MDI score change requests.

(6) Evaluating scores for consistency and alignment between Regions and Navy/Warfare priorities within the shore enterprise.

b. CNIC (N5) is responsible for:

(1) Assisting CNIC (N4) in reconciling the MDI survey team report with comments provided by Region and installation staff.

(2) Reviewing and validating the MDI scores for Warfare Enterprise equities.

c. NAVFAC Headquarters Public Works (HQ PW) is responsible, as funded, for:

(1) Providing MDI consultation and recommendations on the execution of the MDI program.

(2) Providing quarterly program execution briefs to CNIC (N4) to assess the program's efforts and results.

d. Region Commanders are responsible for:

(1) Assigning relevant Warfare Enterprise subject matter experts to review and endorse MDI changes.

(2) Coordinating a leadership review of the Draft MDI Report (Phase IV). This review validates the mission priorities provided by installations, considering the mission assurance and warfare priorities of the installation.

(3) Evaluating scores for consistency and alignment between installations and Warfare Enterprise's priorities within the Region.

e. Installation COs are responsible for:

(1) Ensuring that Functional Managers and the IPOC are available to provide a correct MDI assessment of the facilities to be surveyed.

(2) Receiving in-brief and out-brief from the MDI survey teams and coordinating tenant command participation in the survey.

(3) Coordinating a leadership review of the Draft MDI Report (Phase IV). This review validates the mission priorities provided by individual tenants, considering the mission assurance and warfare priorities of the installation.

f. NAVFAC HQ PW are responsible for:

(1) Coordinating MDI Surveys and update execution.

(2) Conducting MDI Installation Surveys including coordination with IPOC.

(3) Preparing the final report to CNIC from each installation; the report will provide a summary of changes and a table with previous and updated MDI scores as applicable.

(4) Responding to CNIC with respect to questions from the installations regarding the survey and report.

(5) Reviewing and providing recommendations to CNIC on MDI score revision requests.

(6) Updating facility records in iNFADS upon approval of MDI score change by CNIC.

(7) Providing input and recommendations to CNIC on MDI program changes and procedures.

(8) Maintaining MDI information and final installation reports on the CNIC G2 Portal.

(9) Preparing program documentation and correspondence for staffing and issuance through CNIC.

g. Installation COs are responsible for:

(1) Designating an IPOC.

(2) Attending the in-brief with MDI Survey Team, attend the out-brief, and be notified by the IPOC of significant outstanding issues raised in the MDI survey out-brief.

(3) Ensuring the MDI Draft report is vetted through appropriate tenant and staff leadership.

(4) Verifying the accuracy of any MDI score change requests submitted.

7. Records Management. Records created as a result of this instruction, regardless of media and format, will be managed in accordance with SECNAV M-5210.1 of January 2012.

8. Review and Effective Date. Per OPNAVINST 5215.17A, CNIC (N4) will review this instruction annually around the anniversary of its issuance date to ensure applicability, currency, and consistency with Federal, Department of Defense, Secretary of the Navy, and Navy policy and statutory authority using OPNAV 5215/40 Review of Instruction. This instruction will be in effect for 5 years, unless revised or cancelled in the interim, and will be reissued by the 5-year anniversary date if it is still required, unless it meets one of the exceptions in OPNAVINST 5215.17A, paragraph 9. Otherwise, if the instruction is no longer required, it will be processed for cancellation as soon as the need for cancellation is known following the guidance in OPNAV Manual 5215.1 of May 2016.



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Releasability and distribution:

This instruction is cleared for public release and is available electronically via CNIC G2 web site, <https://g2.cnic.navy.mil/CC/Documents/Forms/Directives%20Only.aspx>.

INSTALLATION MISSION DEPENDENCY INDEX SURVEY

1. General Survey Process. MDI survey is an organized process of reviewing all scored facilities to identify the intra and inter dependencies between functional/mission areas and the risks associated with interrupting or relocating the functions that take place in the facilities, from a planned outage perspective. MDI scores are calculated based on survey data submitted during the interviews with installation functional and mission subject matter experts (SME).

2. Intradependencies and interdependencies. MDI scores are calculated on the basis of responses to four questions. The first two questions evaluate the intradependency of facilities, structures and utilities used or controlled by each Functional Area (see Figure 1). The first question focuses on the interruptability of a Functional Element. Interruptability is measured in terms of the amount of time elapsed before mission capabilities are impacted. The second question addresses the difficulty of relocating the operation or service provided by the Functional Element. Based on the responses to these questions a Functional Area Intradependency (MDw) is developed for each facility. The leader(s) directly responsible for the operation or service provided are asked to respond to the following questions:

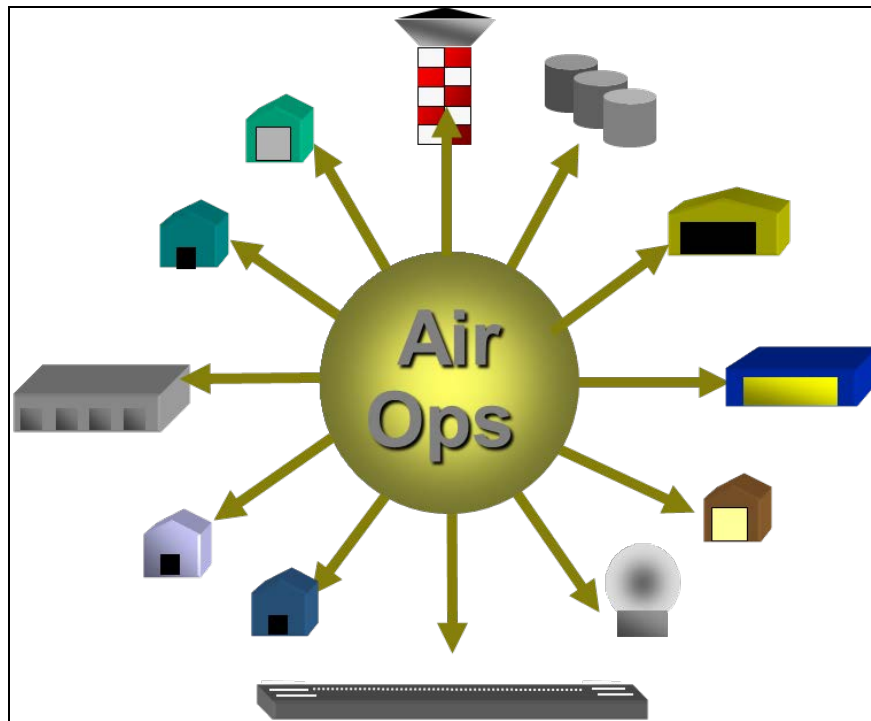


Figure 1 - Intradependency; mission dependency within a Functional Area, or MDw (Sample Installation)

¹ MDI Surveys should include all facilities for which CNIC is the IMC with the exception of Family Housing, Public Private Ventures (PPV) and Outgrants.

3. Calculating Intradependencies

a. Question 1 (Interruptability): How long could the functions supported by your infrastructure be stopped without adverse impact to the mission?

(1) N – None (Must be maintained continuously (24/7) (Note: If you select “N” additional information must be provided to support that the mission can't be interrupted).

(2) B – Brief (minutes or hours not to exceed 24 hours).

(3) S – Short (days not to exceed 7 days or hours).

(4) P – Prolonged (more than a week).

b. Question 2 (Relocatability): If your facility was not functional, could you continue performing your mission by using another facility, or by setting up temporary facilities?

(1) I – Impossible (an alternate location is not available) (Note: If you select "I" for the answer for Question 2, you must explain why it would be impossible to relocate the functions that take place in this facility or to set up a temporary facility or work-around).

(2) X – Extremely Difficult (an alternate location exists with minimally acceptable capabilities, but would require either a significant in-house effort (money/man-hours), dislocation of another major occupant or contracting for additional services and no available contract mechanism is in place to replace the services being provided.

(3) D – Difficult (an alternate location exists with acceptable capabilities and capacity but relocation would require a measurable and unbudgeted level of effort (money/man-hours), but mission readiness capabilities would not be compromised in the process.

(4) P – Possible (an alternate location is readily available with sufficient capabilities and capacity; in addition the level of effort has been budgeted for or can be easily absorbed).

c. The responses to MDI Questions 1 and 2 are entered into spreadsheets to develop a MDw for a facility. Figure 2 provides the developed MDw based on the 16 potential responses to the questions. If a facility has multiple users (functions), the process is repeated for each function and the highest of those MDw scores is used in calculating the final MDI for that facility.

MD_w		Q1: Interruptability of Function			
		None	Briefly	Short	Prolonged
		Available 24hrs/7 days	≤ 24 hrs	1 to 7 days	> 7 days
Q2: Relocateability	Impossible	6.00	5.50	4.67	3.67
	⚠ Difficult	5.10	4.43	3.43	2.60
	⚠ Difficult	4.90	4.23	3.23	2.40
	Possible	4.00	3.00	2.00	1.00

Figure 2 - Intradependence (MD_w) scoring matrix

4. Calculating Interdependencies

a. MDI Questions 3 and 4 evaluate the interdependency between each Functional Area and other installation Functional Areas providing essential operational support or services (see Figure 3). Question 3 focuses on interruptability of operational support or services provided by other installation Functional Areas. Interruptability is measured in terms of time before mission capabilities are impacted. Question 4 focuses on the “ability or difficulty” to replace or replicate the services with another provider from any source.

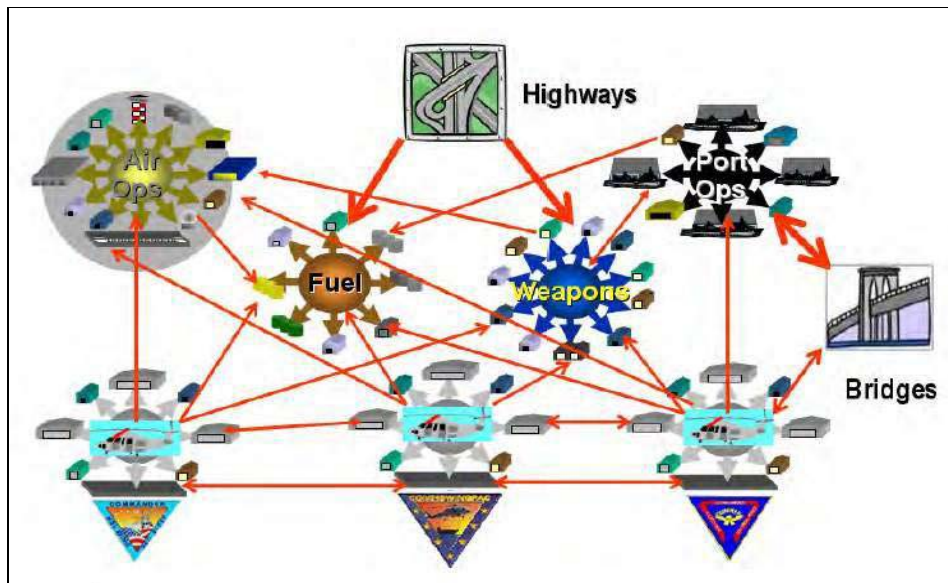


Figure 3 - Interdependency; mission dependency between Functional Areas, or MD_b

b. Question 3 (Interruptability): How long could the services provided by (named Functional Area) be interrupted before impacting your mission readiness?

- (1) N – None (Must be maintained continuously (24/7)).
- (2) B – Brief (minutes or hours not to exceed 24 hours).
- (3) S – Short (days not to exceed 7 days or hours).
- (4) P – Prolonged (more than a week).

c. Question 4 (Replaceability): How difficult would it be to replace or replicate the services provided by (named Functional Area) with another provider from any source?

(1) I – Impossible (there are no known redundancies or excess/surge capacities available, or there are no viable commercial alternatives – only this site/command can provide these services).

(2) X – Extremely Difficult (there are minimally acceptable redundancies or excess/surge capacities available, or there are viable commercial alternatives, but not readily available contract mechanism in place to replace these services).

(3) D – Difficult (services exist and are available, but the form of delivery is ill defined or will require a measurable and unbudgeted level of effort to obtain (money/man-hours), but mission readiness capabilities would not be compromised in the process).

(4) P – Possible (services exist, are available, and are well defined).

d. The responses to MDI Questions 3 and 4 are entered into spreadsheets to develop a MD_b for each functional area, from the point of view of the functional area being interviewed. Figure 4 provides the developed MD_b based on the 16 potential responses to the questions.

MD_b		Q3: Interruptability of Function			
		<u>None</u>	<u>Briefly</u>	<u>Short</u>	<u>Prolonged</u>
		Available 24hrs/7 days	≤ 24 hrs	1 to 7 days	> 7 days
Q4: Relocateability	Impossible	6.00	5.50	4.67	3.67
	X Difficult	5.10	4.43	3.43	2.60
	Difficult	4.90	4.23	3.23	2.40
	Possible	4.00	3.00	2.00	1.00

Figure 4 - Interdependency (MD_b) scoring matrix

e. Because a specific functional area (containing one or more facilities) may be relevant to a number “N” of other functional areas, the MD_b is calculated for each functional area, from the point of view of each of the other functional areas. Then, an average “MD_b avg” is developed that describes the relative importance of a given functional area, from the point of view of the other functional areas that were interviewed. Figure 5 - Sample Facility provides a sample scoring summary for a typical Air Traffic Control Building.

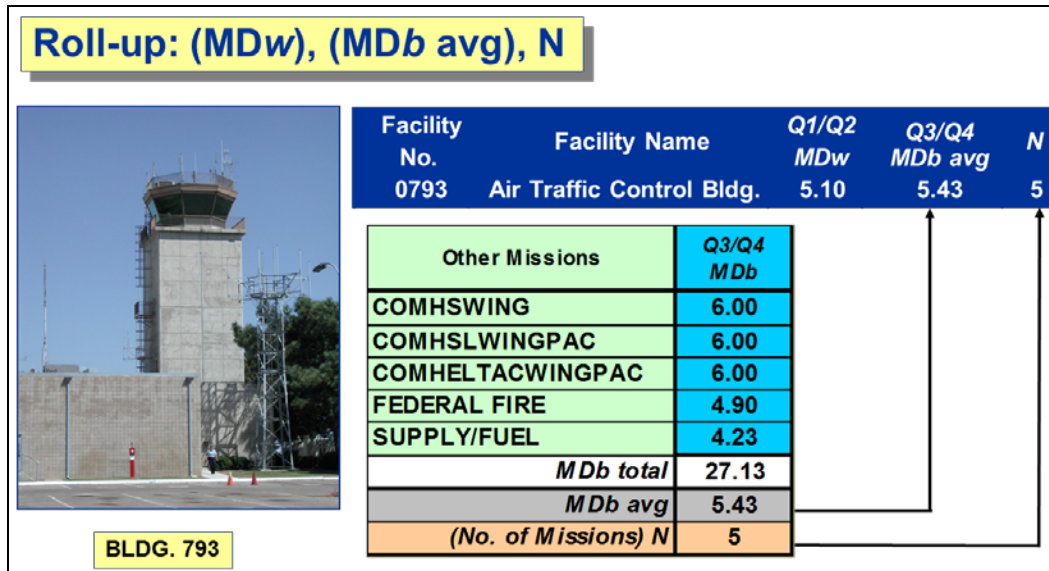


Figure 5 - Sample Facility

5. Calculating the overall MDI score. The data collected is used in conjunction with the MDI algorithm to calculate the MDI score. Using a matrix to quantify and prioritize risk severity does not eliminate the inherently subjective nature of risk assessment; however, a matrix does provide a consistent framework for evaluating risk. While the degree of risk severity is subjective in nature, the matrix does accurately reflect the relative amount of perceived risk severity by leaders responsible for mission execution (subject matter experts).

a. MDI Algorithm: MDI scores are determined using the following weighted algorithm:

$$MDI = \{16.5 * [MD_w + \frac{MD_b \text{ avg}}{8} + 0.1 * LN(N)] - 15.5\}$$

b. Where:

(1) MDI = Mission Dependency Index from 1 to 100.

(2) MD_w = Intradependency Score; response to questions 1 and 2 (see Figure 2). The value will range from 1 to 6.

(3) $MD_b \text{ avg}$ = Interdependency Score; the average response to questions 3 and 4, see Figure 4, from other Functional Areas, in regards to the Functional Area whose MDI is being calculated. The value can range from 1 (Relocation is possible and function may be interrupted for seven or more days) to 6 (Relocation is impossible and the function must never be interrupted). An example of the process is provided in Figure 5.

(4) $LN()$ = natural logarithm function.

(5) N = number of functional Interdependencies.

c. The fourth scoring component of MDI is the value “N” which is the number of Functional Areas identifying interdependency. The number of Functional Areas varies substantially from small to large installations. The natural log function is used because the value of “ $LN(N)$ ” is constrained, and increases at a much slower rate, as “N” increases, as shown in Figure 5. The intradependency and interdependency components of the overall MDI score are weighed as follows:

(1) $MD_w = 84\%$.

(2) $MD_b = 12\%$.

(3) $N = 4\%$.

(4) This means MDI scores are mostly dependent on the subcomponent’s knowledge of its facilities (intradependency).

d. MDI scoring examples. MDI limits operators to 84 points out of 100 when scoring the impact of infrastructure controlled or used by their Functional Area (MD_w , intradependence). This limit assumes that no operator’s Functional Area is critical unless other operators are dependent on the operations or services (mission enabling) they provide (MD_b , interdependence). Totally independent Functional Areas providing no support to other installation Functional Areas are limited to a maximum interdependency (MD_w) score of 84 (exactly at critical breakpoint, as seen in Figure 6). Therefore, only a 24/7 operating facility that is impossible to relocate is critical unless the facility were to receive high interdependency scores from other Functional Areas.

e. In the example Air Traffic Control tower shown in Figure 5 - the overall MDI score is 83 based on four functional dependencies ($N=4$), however if the score was based only on one functional area – the MDI values would range from 77 to 81.

f. In the Final Installation MDI Survey report, the Facility MDI Score is calculated for each functional area, and considers functional interdependency. A facility that hosts four functional areas will have four different MDI scores – which may cross multiple categories. The highest score is shown on the MDI report and recorded in iNFADS.

6. MDI Scale. The scoring nomenclature is divided into five categories, with 15 point spreads separating the critical, significant, relevant and moderate levels. The MDI equation is weighted to allow Functional Elements with high interdependency scores to move up to the next level of criticality. Facilities within the same MDI Category should receive similar attention. For example, a facility with a 75 score is of similar significance as a facility with a score of 82.

MDI Category	Score Range
CRITICAL	100-85
SIGNIFICANT	84-70
RELEVANT	69-55
MODERATE	54-40
LOW	39-1

Figure 6 - MDI Category Score Range

INSTALLATION POINT OF CONTACT (IPOC) RESPONSILITIES AND
QUALIFICATIONS

1. Qualifications:
 - a. Able to access and utilize iNFADS database.
 - b. Able to access NAVFAC Portal.
 - c. Familiar with functional areas throughout installation and affiliated special areas.
 - d. Familiar with facilities impact to mission of installation and supported commands.
2. Phase I – Establish IPOC and coordination prior to onsite work.
3. The phase starts at least three months prior to onsite work, preferably at least six months prior and completed two weeks before survey team arrival. During this period the IPOC will have routine interaction with the survey team, with the contact/effort increasing as Phase II approaches.
4. Installation Commanding Officer (CO) appoints IPOC for logistics and coordination activities and notifies CNIC Mission Dependency Index Program Manager (MDI PM) (six months prior to scheduled survey). MDI Team will then contact the IPOC to:
 - a. Coordinate onsite survey dates with CNIC (NAVFAC) Survey Team.
 - b. Coordinate logistics (meeting space, base access, etc.).
 - c. Review iNFADS record for the installation (including special areas).
 - d. Review facilities for use of Standard Scores.
 - e. Establish Function Area/notional interview groups.
 - f. Make preliminary grouping of facilities to functional areas.
 - g. Develop mission users and planned interview groups for the onsite survey interviews.
 - h. Staff the facility grouping list for local comment as determined by the IPOC.
 - i. Develop schedule for onsite activities, including – in/out briefs, interviews, phoncon/meetings with remote special area representatives as needed.
5. Phase II: The MDI Survey Team Onsite Activities.

6. The phase will last between 1-2 weeks depending on the size of the installation and will require significant IPOC activity during this phase. During this time IPOC will coordinate the execution of the plan established in Phase I. Including:

- a. MDI Survey overview/in-brief to installation CO, Public Works Officer and relevant staff/tenants.
- b. Interviews with tenants.
- c. Out-brief with IPOC, Public Works Officer and command leaders to highlight:
 - (1) Missing data/open issues for the installation to address and provide to survey team.
 - (2) Provide a summary of the findings (scores will not be provided at this time).
 - (3) Receive comments/feedback/concerns from the command.
- d. If the CO is not able to attend the out-brief, the Executive Officer will attend and a summary of the out-brief will be forwarded by the IPOC to the CO.

7. Phase III: MDI Report Preparation.

8. The phase will last 60-120 days and should require no IPOC activity unless missing information/data is identified or information needs to be clarified during analysis and report preparation.

9. During this phase the CNIC (NAVFAC) Survey team collects interview data/responses, completes analysis steps and calculates the proposed facility MDI scores. The report is then reviewed and submitted to the CNIC MDI PM.

10. Phase IV: MDI Report Staffing and Record Updates.

11. CNIC MDI PM reviews the NAVFAC Installation MDI report and distributes to the Assistant Regional Engineer (ARE) for review and comment using the DON TRACKER System. The TRACKER will contain five (5) files:

- a. Draft MDI Report in Excel and PDF Format.
- b. MDI Score Review Report – this report highlights specific facility MDI categories that are 2 categories different than the average facility in that category code. It is intended to assist the installation and Region reviewing the report to highlight potentially divergent scores from other installation, but may still be correct for the installation and its mission.
- c. MDI Report Comment Sheet – used to collect all comments.

d. MDI Report Comment Instructions (for the Region and installation).

12. As part of the ARE review, the installation will be given the opportunity to review/comment on proposed MDI scores. The CO will approve installation comments by checking the appropriate box on the comment review spreadsheet. The ARE will provide the coordinated comments to CNIC in TRACKER.

13. If comments are provided to CNIC, they will be staffed to NAVFAC to respond/reply back to the CNIC MDI PM.

14. Upon review of all comments/responses, the CNIC MDI PM will accept the report as submitted, or accept the report with adjustments based on the comments and notify NAVFAC.

15. NAVFAC will then update iNFADS with the updated installation MDI facility scores and notify the CNIC MDI PM when complete.