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CNIC INSTRUCTION 11100.1

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 Surveys
       (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 requirement in reference
(b).

2. Background

    a. The MDI is an Operational Risk Metric describing the
relative importance of shore facilities in terms of its mission
criticality relative to other facilities within the fence line
of an installation. It evaluates impact to the installation
mission should the infrastructure be damaged or destroyed. 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 allocated properly. Deployed in 2005, the MDI
program is funded by the CNIC HQ Facilities & Environmental
(N4), who executes it via the Naval Facilities Engineering
Command (NAVFAC).

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

    a. MDI Surveys. MDI surveys should be conducted without
regard to Maintenance Unit Identification Codes (MUICs) 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. As surveys are completed, final MDI Survey Results are posted in the folder named "MDI Instruction References" on the NAVFAC Portal.

(1) When MDI surveys are conducted by contract a Contracting Officer's Technical Representative (COTR) shall be in attendance during the on-site activities to assure quality.

(2) The MDI survey addresses four questions for each facility. The first two address intradependency 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).

(3) The phases of a MDI survey are:

(a) Phase I: Identify an Installation Point of Contact (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 and staff. This brief familiarizes the installation staff with the MDI survey process and provides the survey teams' plan of actions and milestone.

(c) Phase III: MDI Report Preparation and Survey Activities. The survey team meets with representatives of the installation and tenant staffs 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 staff, regional staff and CNIC asset management staff. Upon

reconciliation of comments CNIC N4 directs NAVFAC PW to update the installation MDI scores within all pertinent databases.

    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 CNIC G2 site at: https://g2.cnic.navy.mil/teamsites/31f4ea95-e723-40f7-9fa7-1734ffa67a9f/MDI%20Instruction%20References/Forms/AllItems.aspx.

    c. MDI Score Change Requests. Instructions to request changes and submit them for consideration are maintained on the NAVFAC Portal. 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).

4. Responsibilities

    a. CNIC N4 is responsible for:

        (1) Sponsoring the MDI program and funding MDI 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/disapproving MDI score change requests.

    b. 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 monthly progress reports and meetings to assess the program's progress on goals, objectives and timelines.

c. Region Commanders and Installation Commanding Officers (COs) are responsible for:

(1) Ensuring that Functional Managers and the Installation Point of Contact 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 encourage tenants' participation in survey.

5. Actions

a. NAVFAC HQ PW shall:

(1) Coordinate MDI Survey/update execution.

(2) Conduct MDI Installation Survey including coordination with IPOC.

(3) Prepare the final report to CNIC from each installation.

(4) Respond to CNIC with respect to questions from the installations regarding the survey/report.

(5) Review and provide recommendations to CNIC on MDI score revision requests.

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

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

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

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

b.   Installation Commanding Officers (CO) shall:

(1) Designate an IPOC, as requested.

(2) Verify the accuracy of any MDI score change requests submitted.

6.   <u>Records Management</u>. Records created as a result of this instruction, regardless of media and format, shall be managed in accordance with SECNAV M-5210.1 of January 2012.

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Deputy Commander

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INSTALLATION MISSION DEPENDENCY INDEX SURVEY

1. General Survey Process. The Mission Dependency Index (MDI)
survey is an organized process of reviewing all scored
facilities[1] to identify the intra and interdependencies between
functional/mission areas and the ability to interrupt or
relocate the functions that take place in the facilities. 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
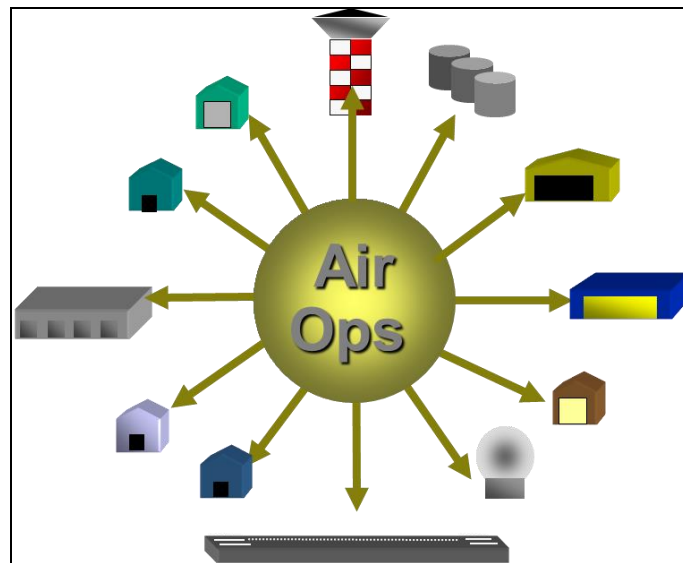following questions:

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

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[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?

        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.

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

        S – Short (days not to exceed 7 days, or Hours)

        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?

        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.

        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.

        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.

        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 sixteen 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
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**

(Q2: Relocateability is the vertical axis label on the left.)

Figure 2 - Intradependence (MDw) 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.
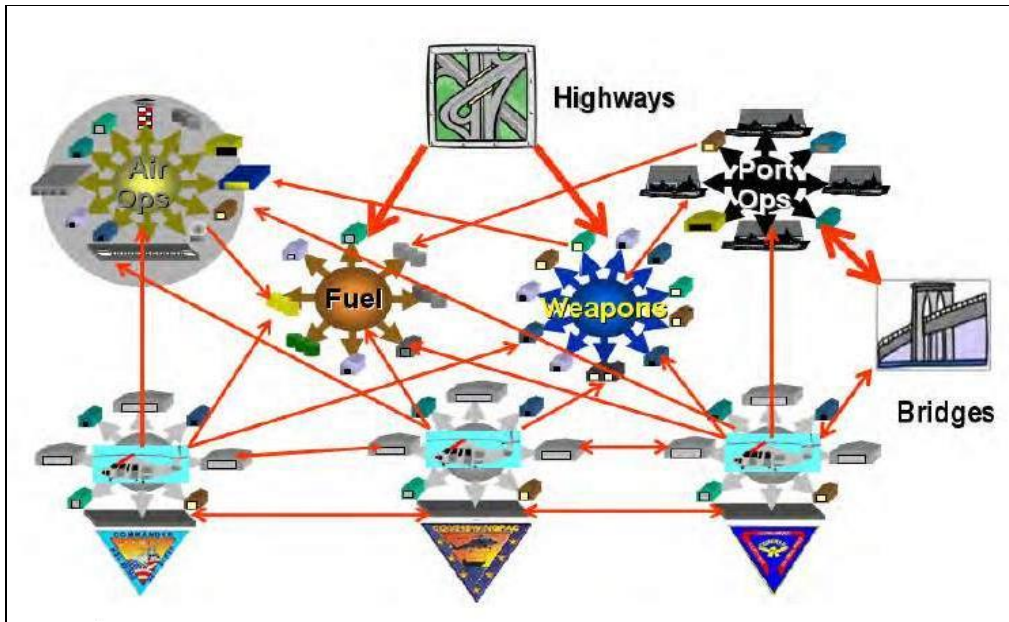
Figure 3 - Interdependency; Mission Dependency between Functional Areas, or MDb

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

        N – None (Must be maintained continuously (24/7))

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

        S – Short (days not to exceed 7 days, or Hours)

        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?

        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)

        X – Extremely Difficult (there are minimally acceptable redundancies or excess/surge capacities available, or there are viable commercial alternatives, but no readily available contract mechanism in place to replace these services)

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)

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 sixteen potential responses to the questions.

MD_b		Q3: Interruptability of Function			
		None	**Briefly**	**Short**	**Prolonged**
		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 (MDb) 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 "MDb 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.
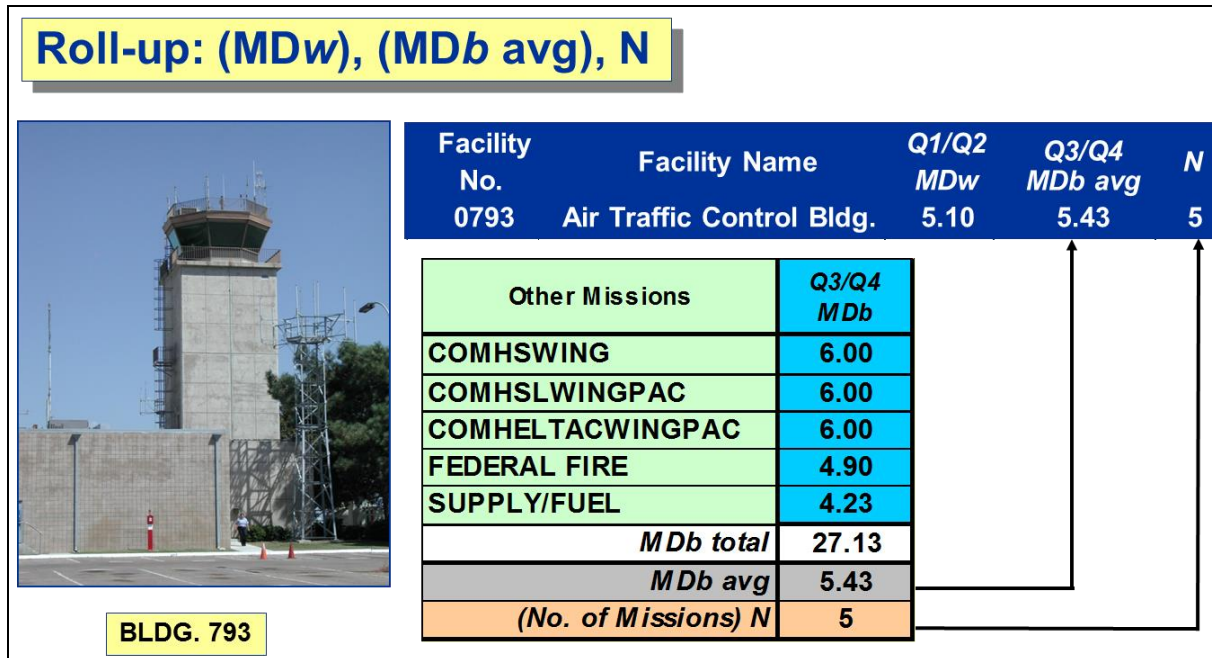
Figure 5 - Sample Facility

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:

$$MDI = \left\{ 16.5 * \left[MDw + \frac{MDb\ avg}{8} + 0.1 * LN(N) \right] - 15.5 \right\}$$

where

        MDI = Mission Dependency Index from 1 to 100

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

MDb 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 7 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

LN( ) = natural logarithm function

N = number of functional Interdependencies

b. 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 is Figure 5. The intradependency and interdependency components of the overall MDI score are weighed as follows:

MDw = 84%
MDb = 12%
N = 4%

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

c. 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 (MDw, 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 (MDb, interdependence). Totally independent Functional Areas providing no support to other installation Functional Areas are limited to a maximum interdependency (MDw) 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.

In the example Air Traffic Control tower shown in Figure 5 – Sample Facility the MDI received is 83 based on all factors, however if the score was based only on one functional area – the MDI values would range from 77 to 81.

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 4 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. <u>MDI Scale</u>. 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 and Score Range

INSTALLATION POINT OF CONTACT 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 Installation Point of Contact (IPOC) and
coordination prior to onsite work.

The phase starts at least 3 months prior to onsite work,
preferably at least 6 months prior, and completed 2 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.

Installation Commanding Officer (CO) appoints IPOC for logistics
and coordination activities and notifies CNIC Mission Dependency
Index Program Manager (MDI PM) (6 months prior to scheduled
survey). MDI Team will then contact the IPOC to:

    a. Coordinate on-site 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 on-site survey interviews

h. Staff the facility grouping list for local comment as determined by the IPOC

i. Develop schedule for on-site activities, including – in/out briefs, interviews, phonecon/meetings with remote special area representatives as needed.

3. Phase II: The MDI Survey Team On-site Activities

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 to highlight

d. Missing data/open issues for the installation to address and provide to survey team

e. Provide a summary of the findings (scores will not be provided at this time)

f. Receive comments/feedback/concerns from the command

4. Phase III: MDI Report Preparation

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.

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.

5. Phase IV: MDI Report Staffing and Record Updates

CNIC MDI PM reviews the NAVFAC Installation MDI report and distributes to the Assistant Regional Engineer (ARE) for review and comment using the OPNAV HQWeb Taskers system (TV-5). As part of the ARE review, the installation shall be given the

opportunity to review/comment on proposed MDI scores. The ARE shall provide the coordinated comments to CNIC in TV-5.

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

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

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