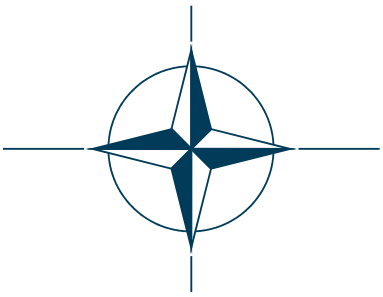
NORTH ATLANTIC TREATY ORGANISATION



(NATO)

ADDITIONAL MILITARY LAYERS

PRODUCTION SPECIFICATION

Version 1.1, 1st July 2007

Produced and issued by the United Kingdom Hydrographic Office under the direction of the Geospatial Maritime Working Group of the NATO Geographic Conference.

Document Control

VERSION CONTROL

Date	Author	Issue	Summary of Changes
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	B Parish	0.1.2	Change to 2.10
09/03/05	B Parish	0.1.3	GMWG-2 inputs
07/04/05	B Parish	0.1.4	Consolidation for May 05 review
11/05/05	B Parish	0.1.5	Inclusion of UKHO additions
25/05/05	AML PHWG	0.1.6	Resolution of issues
1 July 2005	AML PHWG	1.0 issue	Refinement to annex A, GMWG-3 removed unresolved issues.
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ISSUE APPROVALS

Approver and Title	Signature	Issue Version	Date
Chairman Geospatial Maritime Working Group		1.0	21/10/05

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1 INTRODUCTION

1.1 SCOPE

The main body of this Production Specification (as distinct from the AML Product Specifications) describes details of how the content of any given AML dataset is to be encoded. This document covers the entirety of AML as several of the concepts are common to more than one AML Product Specification.

This document is necessary to ensure that datasets are not only conformant to the AML Product Specifications (PS) but that the data produced by a wide range of producers is consistent in support of coalition interoperability. Where the words “will” or “shall” are used the intention is to constrain producers to a harmonised production method as failure to do so would limit the utility of the data produced. Otherwise this document provides guidance to AML data producers.

Where the AML Production Harmonisation Working Group (PHWG) have agreed a technical approach, decisions are recorded in section 2 of this document. Section 4 contains details of current issues which have not yet been resolved. The intention is that this document will grow incrementally as issues are identified and resolved by the PHWG. When solutions recorded in section 2 of this document are considered to be mature and stable they may migrate to the appropriate AML Product Specification at its next scheduled revision.

1.2 GENERAL INFORMATION ON THE PRODUCTION SPECIFICATION

1.2.1 Version Number

1.1

1.2.2 Date of Issue

1st July 2007

1.2.3 Custodian of the Production Specification

The Custodian of this specification is the United Kingdom Hydrographic Office:

United Kingdom Hydrographic Office
Admiralty Way
Taunton
Somerset
TA1 2DN

Telephone: +44(0) 1823 337900
Fax: +44(0) 1823 284077
E-mail:aml@ukho.gov.uk

1.2.4 Relevant STANAG Number

NATO STANAG No.7170 Additional Military Layers (AML).

1.3 STATUS OF THE PRODUCTION SPECIFICATION

This Production Specification will be endorsed by the Geospatial Maritime Working Group (GMWG) of the NATO Geographic Conference and formally issued on the AML website. Working drafts will also be posted on the AML website for review and subsequent endorsement by the GMWG.

1.4 SECURITY

1.4.1 Security Classification of the Specification

The Production Specification is UNCLASSIFIED.

1.5 CONTENTS OF THE DOCUMENT

The AML Production Specification is laid out as described in the table of contents.

A cross-reference in the text will be included for instances when there are relevant details in one or more of the other AML documents.

1.6 REFERENCES

The following standards and specifications affect the content of this Production Specification.

1.6.1 Standards

NATO STANAG 7170	Additional Military Layers.
NATO STANAG 4564	Standard for Warship Electronic Chart Display and Information System (WECDIS), Edition 1, Annex B, Data Products.

S-57 APPENDIX B.1, Annex A, Use of the Object Catalogue for ENC

1.6.2 Specifications

AML Product Specifications and carrier annexes in particular A.3

ENC Product Specifications

AML Product Specifications (section 6)

1.6.3 Other References

IHO Circular letter 47/2004

1.7 DEFINITIONS

AML	AML is a unified range of digital geospatial data products designed to satisfy the totality of NATO non-navigational maritime defence requirements.

1.8 KEY WORDS

AML

PRODUCT SPECIFICATION
PRODUCTION SPECIFICATION

1.9 MAINTENANCE AND SUPPORT OF THE PRODUCTION SPECIFICATION

Specific processes and mechanisms that are established for the maintenance of AML Production Specifications are described in the sections 1.9.1 to 1.9.6 below.

1.9.1 Frequency of Review

As determined by Producing Agencies

1.9.2 Method of Maintenance

Corrections, clarifications and requests for change will be administered by the custodian. Discussion regarding proposed changes will be carried out by correspondence with National Points of Contact and implemented by the AML Production Harmonisation Working Group (AML-PHWG).

Changes to the Production Specification will be reviewed by committee[1] during preparatory work for production of the next edition of the specification.

1.9.3 Method of Promulgation

Maintenance documents, new editions of specifications, and related documentation will be published on the AML website.

1.9.4 Authority Responsible for Maintenance

AML Production Specification will be maintained by the Custodian specified in section 1.2.3.

1.9.5 Error Reporting/Change Request Procedure

Comments concerning the content of the AML Production Specification and requests for change should be addressed to the Custodian.

1.9.6 Available Support

Contact the Custodian for guidance and advice relating to this production specification.

[1] Will be a specific group reporting to the GMWG or its successor.

2 AML PRODUCTION SPECIFICATION

2.1 SCOPE OF THE PRODUCTION SPECIFICATION

This Production Specification covers the entirety of AML data.

Normal cartographic practice is assumed and unless otherwise stated in this document the standards for AML production will follow ENC data production standards.

2.2 CONTOUR VERTICAL INTERVAL IN CLB PRODUCTS

Not all CLB scale bands will be produced, those indicated below will be compiled with the vertical interval specified. In some cases particular users have requirements for specific contours irrespective of the general rules.

SCALE BAND	DATA COMPILATION SCALE	DISPLAY SCALE RANGE
1	< 1:100,000,000	< 1:40,000,000
2	1: 25,000,000	1: 10,000,000 - 1:62,500,000
3	1: 5,000,000	1: 2,000,000 - 1:12,500,000
4	1: 1,000,000	1:400,000 - 1: 2,500,000
5	1:250,000	1:100,000 - 1:625,000
6	1:50,000	1:20,000 - 1:125,000
7	1:10,000	1:4,000 - 1:25,000
8	1:2,500	1:1,000 - 1:6,250
9	> 1:1,600	> 1:1,500

The following table indicates the minimum standard for CLB data product content.

SCALE BAND	CLB contour range	Vertical Interval 1	CLB contour range	Vertical Interval 2	CLB contour range	Vertical Interval 3
1						
2						
3						
4	0-500	50m	501-3000	100m	3001 +	500m
5	0-200	10m	201-400	20m	401+	50m
6	0-100	5m	101-400	10m	401+	20m
7	0-10	1m	11-100	5m	101+	10m
8						
9						

Producers are free to add extra supplementary contours where the bottom topography is not adequately represented by contours at the specified interval or in response to specific

requirements. If supplementary contours at a higher resolution are added the contours at the specified vertical intervals must be retained, eg. if a user includes contours at 20 metre intervals where the minimum standard is 50 metres the sequence will be 20, 40, 50, 60, 80 etc. A better solution in this scenario may be to choose to add supplementary contours at either 25 metre or 10 metre intervals as both of these solutions extend the natural sequence and include the 50 metre contour. All depth areas between contours must be created.

Shoal bias is not to be introduced in the CLB data production process.

Display systems will be able to suppress contours where the bottom topography makes the display of contours at the above interval unacceptably cluttered.

It is expected that soundings will be included at the discretion of the Producing Agency.

2.3 GEOGRAPHIC ORGANISATION

AML products will be partitioned by geographic region. This will vary widely depending upon the scale band of the product and the density of the data. Datasets are to be partitioned geographically.

If a data producing agency chooses to partition RAL data such that the geographical extent of the cell is as large as possible, the partitioning of the data into sub-layers should conform to the following rules;

The following designators should be used to indicate the sub-layer in character 6 of the filename. In the instance where RAL is not sub-layered character 6 will not contain TAMP or Q.

RAL – Territorial Sea Boundaries.	T
RAL – Aeronautical data.	A
RAL – Practice & exercise areas.	P
RAL – Marine Management Areas	M
RAL – Q-Routes	Q

The content of the sub-layers is indicated at annex A

2.4 CODING OF METADATA

This should be dictated by efficiency of data capture, storage and the maximum use of inheritance. All metadata should be recorded at the highest possible level in the dataset.

There should be consistency in the approach to recording how data has been captured and the accuracy of the source data. Use M_SREL to describe the survey type, scale, date and authority. Where data has been compiled from a mixture of survey and already compiled data (e.g. ENC contours) then this information needs to be added to INFORM in M_PROD with a note to visit M_SREL for further details of surveys applied.

2.5 DEFINITION OF LINES BETWEEN POINTS

Producing Authorities and production systems should avoid defaulting to either geodesic or loxodrome when an area is defined by its vertices and the nature of the line joining the

points is unspecified. If the line is of vital importance the vertices should be chosen such that deviations are within an acceptable range. Upon successful transition to v2.0 of the AML Product Specifications it will be possible to record that the nature of the joining line is unknown.

2.6 IN THEATRE COLLECTED DATA CELL NAMES

Product Specifications (PS) require that the following convention be followed:

Example filename UKE6U123
Where
UK = the two-letter NATO country code of the producer (NATO STANAG 1059)

E = the first character of the three-letter AML product identifier. As defined, the overall basic AML service would be made up of nine S-57 products:

M – MFF (Maritime Foundation and Facilities)
E – ESB (Environment, Seabed and Beach)
R – RAL (Routes Areas and Limits)
L – LBO (Large Bottom Objects)
S – SBO (Small Bottom Objects)
C – CLB (Contour Line Bathymetry)
I – IWC (Integrated Water Column)
A – AMC (Atmospheric & Meteorological Climatology)
N – NMB (Network Model Bathymetry)

6 = 'Compilation Scale Band'
0 - Non-Scaled Information only
1 - < 1:100,000,000
2 - 1: 25,000,000
3 - 1: 5,000,000
4 - 1: 1,000,000
5 - 1:250,000
6 - 1:50,000
7 - 1:10,000
8 - 1:2,500
9 - > 1:1,600

U = the security classification code:
N – Cosmic Top Secret
W – Focal Top Secret
T – Top Secret
S - Secret
C - Confidential
R - Restricted
U - Unclassified

123 = product specific alphanumeric identification. This is dependent upon the geographical partitioning of the product.

The first 5 characters of the file name are mandated by the specifications. The final three characters can be used in any way at the discretion of the producing country. See section 2.3 and Annex A.

2.6.1 Scenario

It is anticipated that assets deployed in support of operations and exercises will collect environmental information for the purposes of their immediate use and transfer to other coalition forces. This data will be transferred around a coalition force in the form of AML data, in datasets named in conformance to the published standard (above). Some of this data will be fully conformant and have a long operational life but most is expected to have a short operational life.
All data produced in-theatre, which has potential for future use beyond the current exercise or operation, should be passed to an AML Producing Agency for validation or post processing and re-export in the form of endorsed AML data.
In some cases it is anticipated that AML data will be collected and transferred in collections of features which do not conform to any single published Product Specification.

2.6.2 Policy for "in-theatre" created, AML dataset naming

Further investigation is being done to define the naming requirement for AML datasets collected "in-theatre". Until further policy is defined, any "in-theatre" generated datasets should conform to the file naming specification defined in the Product Specifications and repeated in Para 2.6 above. In practice this means the 6-8th characters of the filename should be 'locally' managed during any exercise or operation to ensure non-duplication of filenames and the establishment of any required audit trail between any AML-generating assets.

2.7 CELL SHAPES

AML cells will continue to be rectangular despite the loosening of this constraint in the v2.0 PS

2.8 DATASET JOINS

In order to avoid potential boundary mismatches a common CoOrdinate Multiplication Factor (COMF) shall be universally applied by AML Producing Agencies. AML shall be produced with a COMF value of 10,000,000, this is conformant to the COMF value used by the ENC producing community.

3 CAVEAT

All of the above may be modified by special requests for mission specific datasets.

Annex A

Separation of AML RAL into 5 sub-layers with feature-contents and possible sources.

Contents of RAL- Sub-Layer A (Flight & Aeronautical Information)

AIRARE	Airport/Airfield
airres	Airspace Restriction
atsctl	ATS Route Centerline
ctlasp	Controlled Airspace
mexasp	Military Exercise Airspace
navaid	Navigation system (NAVAID)

Contents of RAL- Sub-Layer P (Practice & Exercise Area)

MIPARE	Military Practice Area
patare	Patrol Area
SUBTLN	Submarine Transit Lane

Contents of RAL- Sub-Layer M (Marine Management Area)

CHKPNT	Checkpoint
FERYRT	Ferry Route
iceadv	Ice Advisory Area
icerte	Ice Route
marman	Marine Management Area
msiare	Marine Safety Information Area
RADRNG	Radar Coverage
RADSTA	Radar Station
rdoare	Radio Broadcast Area
RDOCAL	Reporting/Radio calling-in point
RDOSTA	Radio Station
RESARE	Restricted Area
tfcrte	Traffic Route

Contents of RAL- Sub-Layer T (Territorial Sea Boundaries)

COSARE	Continental Shelf Area
CONZNE	Contiguous Zone
EXEZNE	Exclusive Economic Zone
FSHZNE	Fishing Zone
intwtr	Internal Waters Area
TESARE	Territorial Sea Area
STSLNE	Territorial Sea Baseline

Contents of RAL- Sub-Layer Q (Q-Routes)

qroute	Q-Route Leg
turnpt	Turning Point