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# Registration of Military Message Handling System (MMHS) header fields for use in Internet Mail
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Abstract

A Miltary Message Handling System (MMHS) processes formal messages ensuring release, distribution, security, and timely delivery across national and international strategic and tactical networks. The MMHS Elements of Service are defined as a set of extensions to the ITU-T X.400 (1992) international standards and are specified in STANAG 4406 Edition 2. This document describes a method for enabling those MMHS Elements of Service that are defined as Heading Extension to be encoded as RFC 5322 (Internet Email) message header fields. These header field definitions support the provision of a STANAG 4406 MMHS over Internet Email, and also provides for a STANAG 4406 / Internet Email Gateway supporting message conversion compliant to this specification.

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## 1. Introduction

[RFC5322] defines a protocol for the format of electronic messages exchanged on the Internet. MMHS is a military specification defined in STANAG 4406 [STANAG-4406] which defines a number of extensions to the basic X.400 (1992) protocol for the services required by military mail.

This document enables the provision of most of the elements of service defined in STANAG 4406 [STANAG-4406] for Internet Email. This specification is written to extend the MIXER specification [RFC2156] to enable inter-conversion in a MIXER gateway with the X.400 IPMS heading extensions defined in STANAG 4406 Annex A.

The document is primarily aimed at the ability to represent MMHS messages in RFC 5322. The RFC 5322 header fields defined are prefixed with the string "MMHS-" to distinguish them from any other header fields.

## 2. Conventions Used in This Document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

The formal syntax use the Augmented Backus-Naur Form (ABNF) [RFC5234] notation including the core rules defined in Appendix B of RFC 5234 [RFC5234].

## 3. Registration Templates

Header field entries are summarized in tabular form for convenience of reference and presented in full in the following sections.

Any header field specified in this document MUST NOT appear more than once in message headers.

## 3.1. Permanent MMHS Header Field Registrations

| Header name | Protocol | Reference |
|---|---|---|
| MMHS-Exempted-Address | mail | [STANAG-4406], A1.1 and B.105 |
| MMHS-Extended-Authorisation-Info | mail | [STANAG-4406], A1.2 and B.106 |
| MMHS-Subject-Indicator-Codes | mail | [STANAG-4406], A1.3 and B.107 |
| MMHS-Handling-Instructions | mail | [STANAG-4406], A1.4 and B.108 |
| MMHS-Message-Instructions | mail | [STANAG-4406], A1.5 and B.109 |
| MMHS-Codress-Message-Indicator | mail | [STANAG-4406], A1.6 and B.110 |
| MMHS-Originator-Reference | mail | [STANAG-4406], A1.7 and B.111 |
| MMHS-Primary-Precedence | mail | [STANAG-4406], A1.8 and B.101 |
| MMHS-Copy-Precedence | mail | [STANAG-4406], A1.9 and B.102 |
| MMHS-Message-Type | mail | [STANAG-4406], A1.10 and B.103 |
| MMHS-Other-Recipients-Indicator | mail | [STANAG-4406], A1.12 and B.113 |
| MMHS-Acp127-Message-Identifier | mail | [STANAG-4406], A1.14 and B.116 |
| MMHS-Originator-PLAD | mail | [STANAG-4406], A1.15 and B.117 |

## 3.2. Header field: MMHS-Exempted-Address

Applicable protocol: mail [RFC5322]
Status: informational
Author/change controller: IETF (iesg@ietf.org)
Specification document(s): [[anchor5: this document]]

The exempted address header field, by its presence indicates the addresses of members in an Address List (AL) that should not receive the message. If this extension is absent from the Extensions heading field, all members of an AL will be considered to be valid recipients of the message. Note: There is no guarantee that the exempted addresses will not receive the message as the result of redirection, Distribution List (DL) expansion, etc.

Example:
MMHS-Exempted-Address: UK SHL CGT Samuals G
<graham.samuals@shl.example.com>, UK SHL Duty Officer
<duty@shl.example.com>

### 3.3. Header field: MMHS-Extended-Authorisation-Info

Applicable protocol: mail [RFC5322]
Status: informational
Author/change controller: IETF (iesg@ietf.org)
Specification document(s): [[anchor7: this document]]

The extended authorisation info header field, by its presence indicates either the date and the time when the message was officially released by the releasing officer or the date and time when the message was submitted to a communication facility for transmission.

This header field SHOULD always be present in an email message which complies with this specification.

Example:
MMHS-Extended-Authorisation-Info:
Mon, 09 Aug 2010 15:27:40 +0100

The example above demonstrates use of folding white space (FWS [RFC5322]).

### 3.4. Header field: MMHS-Subject-Indicator-Codes

Applicable protocol: mail [RFC5322]
Status: informational
Author/change controller: IETF (iesg@ietf.org)
Specification document(s): [[anchor9: this document]]

Subject Indicator Codes (SICs) are a mechanism for formally identifying the topic of a message. SICs are nested codes that provide information for message distribution after delivery to the recipient organisation. SIC codes are usually three letters or three letters and digits, but may be up to 8 characters long. Nations and organizations using SIC codes usually maintain a central registry.

A present MMHS-Subject-Indicator-Codes header field contains a SIC, which indicates distribution information to a recipient or a recipient's User Agent. This information can be used to perform automatic or manual local distribution of a message. If the MMHS-Subject-Indicator-Codes header field is absent, then the local distribution will be in accordance with the message handling policy

of the recipient's domain.

[STANAG-4406] specifies two optional components of the Distribution Code Element of Service. The MMHS-Subject-Indicator-Codes header field covers only the SIC code variant of distribution codes.

Example:
MMHS-Subject-Indicator-Codes: SDM; KKZ ; BRL

The example above includes 3 SIC codes: "SDM" (GROUND/LAND REQUIREMENTS), "KKZ" (HELICOPTER PUBLICATIONS/MANUALS) and "BRL" (HILEX INCIDENTS).

## 3.5. Header field: MMHS-Handling-Instructions

Applicable protocol: mail [RFC5322]
Status: informational
Author/change controller: IETF (iesg@ietf.org)
Specification document(s): [[anchor11: this document]]

The handling instructions header field, by its presence indicates human readable local handling instructions that requires some manual handling by a traffic operator. If this header field is absent the message will be considered as not requiring manual handling by a traffic operator.

Handling instructions (also called transmission instructions) are a part of format line 4 as defined in ACP 127 [ACP127], and concern the sending of the message, e.g. that a particular system shall be used for transfer of the message.

This header field is used to support interoperability with ACP 127 systems.

Example:
MMHS-Handling-Instructions: ZNY; RRRRR

The example above includes 2 ACP127(G) handling instructions examples: "ZNY" and "RRRRR". "ZNY" indicates that the message is transmitted over networks that meet security criteria for classified handling. "RRRRR" indicates that the network must be at least of Restricted Sensitivity for transmitting the message.

## 3.6. Header field: MMHS-Message-Instructions

Applicable protocol: mail [RFC5322]
Status: informational
Author/change controller: IETF (iesg@ietf.org)

Specification document(s): [[anchor13: this document]]

The message instructions header field, by its presence indicates message instructions accompanying the message (e.g., similar to the operating signals specified in ACP 131 [ACP131]). If this header field is absent the message will be considered received without message instructions.

The difference between Handling instructions and Message instructions is that the former is only for manual handling by traffic operators, while the latter also contains information of interest to the persons reading the message.

Example:
MMHS-Message-Instructions: MINIMIZE CONSIDERED; NO DISTRIBUTION

The example above includes 2 ACP123(B) [ACP123] defined message instructions: "MINIMIZE CONSIDERED" indicating that the originating user has considered the Minimize status of the recipients and "NO DISTRIBUTION", indicating that the recipients should not distribute the message further without the originating user's approval.

## 3.7. Header field: MMHS-Codress-Message-Indicator

Applicable protocol: mail [RFC5322]
Status: informational
Author/change controller: IETF (iesg@ietf.org)
Specification document(s): [[anchor15: this document]]

The codress message indicator header field, by its presence indicates that the message is in Codress format. If this header field is absent the message will be considered received without the Codress format.

A Codress message is one in which all addresses, i.e. the sender and all recipients, is encrypted within the ACP 127 text (body). The heading of any Codress message contains only the minimum of information which will enable a receiving station to deal properly and expeditiously with the particular transmission. The general rules for the preparation and transmission of Codress messages are given in ACP 121 [ACP121].

This header field is used only to support interoperability with ACP 127 systems.

Example:
MMHS-Codress-Message-Indicator: 23

### 3.8. Header field: MMHS-Originator-Reference

Applicable protocol: mail [RFC5322]
Status: informational
Author/change controller: IETF (iesg@ietf.org)
Specification document(s): [[anchor17: this document]]

The originator reference header field, by its presence indicates a user defined reference called the "originator's number". If this header field is absent, then the message will be considered received without any user defined reference.

The "originator's number" is used by the originating organisational unit and is further qualified within national policy.

Note: trailing and leading spaces in an originator reference are not allowed. Any leading or trailing spaces would be stripped.

Example:
MMHS-Originator-Reference: UNCLAS WHAT WAS 1500Z POSITION OF USS ESTES

### 3.9. Header field: MMHS-Primary-Precedence

Applicable protocol: mail [RFC5322]
Status: informational
Author/change controller: IETF (iesg@ietf.org)
Specification document(s): [[anchor19: this document]]

The primary precedence header field, by its presence indicates the precedence level of the primary ("action") recipients. The message originating domain shall ensure that this header field is always present if the message contains "To:" (action) addresses.

The MMHS Primary Precedence Element of Service indicates the relative order in which Military Messages are to be handled for primary (action) recipients, i.e. a Military Message with higher MMHS-Primary-Precedence header field value should be handled before a Military Message with a lower MMHS-Primary-Precedence header field value.

The header field value is an integer, or one of the 6 predefined case-insensitive labels: "deferred" (same as "0"), "routine" (same as "1"), "priority" (same as "2"), "immediate" (same as "3"), "flash" (same as "4"), or "override" (same as "5").

Example 1:
MMHS-Primary-Precedence: 0 (Deferred)

Example 2:
MMHS-Primary-Precedence: FLASH

Example 3:
MMHS-Primary-Precedence: 7

### 3.10. Header field: MMHS-Copy-Precedence

Applicable protocol: mail [RFC5322]
Status: informational
Author/change controller: IETF (iesg@ietf.org)
Specification document(s): [[anchor21: this document]]

The copy precedence header field by its presence indicates the precedence level of the copy ("information") recipients. The message originating domain shall ensure that this header field is always present if the message contains "Cc:" or "Bcc:" (information) addresses.

The MMHS Copy Precedence Element of Service indicates the relative order in which Military Messages are to be handled for copy (information) recipients. i.e. a Military Message with higher MMHS-Copy-Precedence header field value should be handled before a Military Message with a lower MMHS-Copy-Precedence header field value.

The header field value is an integer, or one of the 6 predefined case-insensitive labels: "deferred" (same as "0"), "routine" (same as "1"), "priority" (same as "2"), "immediate" (same as "3"), "flash" (same as "4"), or "override" (same as "5").

Example 1:
MMHS-Copy-Precedence: 4 (flash)

Example 2:
MMHS-Copy-Precedence: Flash

### 3.11. Header field: MMHS-Message-Type

Applicable protocol: mail [RFC5322]
Status: informational
Author/change controller: IETF (iesg@ietf.org)
Specification document(s): [[anchor23: this document]]

The message type heading extension, by its presence indicates whether the message is to be considered as an exercise, an operation, a project or a drill. (Note that the list of types is extensible and other types can be specified using the numeric form, see below.) It

may includes an optional parameter specifying the name of the exercise, operation, project or drill. If this extension is absent the message will be considered to be of an undefined type.

The header field value is a non-negative integer, or one of the 4 predefined case-insensitive labels: "exercise" (same as "0"), "operation" (same as "1"), "project" (same as "2"), "drill" (same as "3").

Example 1:
MMHS-Message-Type: 0(exercise); identifier="CANDLE FISH"

Example 2:
MMHS-Message-Type: 3

Example 3:
MMHS-Message-Type: 2 (projet)

Example 4:
MMHS-Message-Type: project

Note that some of the examples above demonstrate use of optional comments. See Section 4 for the exact syntax of this header field.

### 3.12. Header field: MMHS-Other-Recipients-Indicator

Applicable protocol: mail [RFC5322]
Status: informational
Author/change controller: IETF (iesg@ietf.org)
Specification document(s): [[anchor25: this document]]

The other recipients indicator header field, by its presence indicates the names of recipients, as well as the category (primary or copy) in which they are placed, that are intended to receive or have received the message via means other than MMHS. The absence of this element does not guarantee that all recipients are within the MMHS.

This MMHS Element of Service enables an MMHS recipient to determine all recipients of a Military Message. There are several reasons as to why a recipient of a Military Message may be identified by this header:

1. The recipient is not part of the MMHS

2. The path to the recipient through the MMHS may not be secure, therefore, the originator has used alternative mechanisms to distribute the Military Message

3. The recipient was already in receipt of the Military Message prior to it being inserted into the MMHS

Example:
MMHS-Other-Recipients-Indicator: primary="UK SHL COS"; COPY = "UK SHL LEGAD";
primary= "UK SHL IM"

The example above includes names of 3 recipients which received the message via means other than MMHS. Two of the recipients is primary (action) and another is a copy (information) recipient.

## 3.13. Header field: MMHS-Acp127-Message-Identifier

Applicable protocol: mail [RFC5322]
Status: informational
Author/change controller: IETF (iesg@ietf.org)
Specification document(s): [[anchor27: this document]]

The ACP127 message identifier header field, by its presence indicates an ACP 127 message identifier [ACP127] which originated from an ACP 127 domain. If this extension is absent, then the message did not encounter an ACP 127 domain.

The acp127-message-identifier contains the contents of ACP127 format line 3 consisting of the Calling Station (DERI), Station Serial Number (SSN), and Filing Time (JFT).

This header field is used only to support interoperability with ACP 127 systems.

Example:
MMHS-Acp127-Message-Identifier: RPDLE 123 11/1215Z

## 3.14. Header field: MMHS-Originator-PLAD

Applicable protocol: mail [RFC5322]
Status: informational
Author/change controller: IETF (iesg@ietf.org)
Specification document(s): [[anchor29: this document]]

The originator Plain Language Address Designators (PLAD) header field, by its presence indicates the plain language address associated with an originator for cross reference purposes. If this header field is absent, then the message will be considered to not having an originators PLAD cross reference between the MMHS and ACP 127 domains.

This header field is used only to support interoperability with ACP 127 systems.

This MMHS header field and the Extended Authorisation Info header field provide a cross reference for message identification in both ACP 127 and MMHS domains.

Example:
MMHS-Originator-PLAD: SACLANT

## 4. Formal Syntax

The following syntax specification uses the Augmented Backus-Naur Form (ABNF) as described in [RFC5234]. Terms not defined here are taken from [RFC5322] and [RFC2156].

```
NZ-DIGIT       =  %x31-39
                  ; "1".."9"

nonneg-integer = "0" / (NZ-DIGIT *DIGIT)

integer = ["-" / "+"] nonneg-integer
          ; ////Any min/max limit?

military-string = 1*69( ps-char )

quoted-military-string = DQUOTE military-string DQUOTE

military-string-sequence = military-string [ [FWS] ";" [FWS] military-
string-sequence ]

Exempted-Address = "MMHS-Exempted-Address:" [FWS] address-list [FWS] CRLF
 ;; /////Are "[FWS]" around address-list needed/allowed?

Extended-Authorisation-Info = "MMHS-Extended-Authorisation-Info:" [FWS]
date-time CRLF

Subject-Indicator-Codes = "MMHS-Subject-Indicator-Codes:" [FWS] [sic-
sequence] [FWS] CRLF

sic-sequence = sic *( [FWS] ";" [FWS] sic )
               ; STANAG 4406 specifies that the maximum number of SICs is
8.
               ; Use of more than 8 SIC codes is permitted, but additional
               ; SIC codes might not be transferred to STANAG 4406 system

sic = 3*8( ps-char )

Handling-Instructions = "MMHS-Handling-Instructions:"
```

[FWS] military-string-sequence [FWS] CRLF

Message-Instructions = "MMHS-Message-Instructions:"

```
                        [FWS] military-string-sequence [FWS] CRLF

    Codress-Message-Indicator = "MMHS-Codress-Message-Indicator:" [FWS] integer
[FWS] CRLF

    Originator-Reference = "MMHS-Originator-Reference:"
                        [FWS] military-string [FWS] CRLF

    PrimaryPrecedence = "MMHS-Primary-Precedence:" [FWS] precedence CRLF

    CopyPrecedence = "MMHS-Copy-Precedence:" [FWS] precedence CRLF

    precedence = (nonneg-integer / std-precedence) [CFWS]

    std-precedence = "deferred" / "routine" / "priority" /
                     "immediate" / "flash" / "override"
                     ; deferred == 0
                     ; routine == 1
                     ; priority == 2
                     ; immediate == 3
                     ; flash == 4
                     ; override == 5

    MessageType = "MMHS-Message-Type:" [FWS] message-type [CFWS]
                  [";" [FWS] MessageTypeParam [FWS] ] CRLF

    message-type = nonneg-integer / std-message-type

    std-message-type = "exercise" / "operation" / "project" /  "drill"
                       ; exercise  == 0
                       ; operation == 1
                       ; project == 2
                       ; drill == 3

    MessageTypeParam = "identifier" [FWS] "=" [FWS] quoted-military-string

    DesignatorType = "primary" / "copy"

    Designator = DesignatorType [FWS] "=" [FWS] quoted-military-string

    OtherRecipientIndicator = "MMHS-Other-Recipients-Indicator:"
                              [FWS] Designator *([FWS] ";" [FWS] Designator)
[FWS] CRLF

    Acp127MessageIdentifier = "MMHS-Acp127-Message-Identifier:"
                              [FWS] military-string [FWS] CRLF

    OriginatorPLAD = "MMHS-Originator-PLAD:" [FWS] military-string [FWS] CRLF
```

```
    address-list = <Defined in RFC 5322>
```

## 5. Service in Comparison to STANAG 4406

The service specified in this document is a subset of the functionality set out in Annex A1 "Military Heading Extensions" of [STANAG-4406]. The majority of this functionality is supported. A few capabilities have been left out which would have significantly increased the complexity of this specification, and do not appear to be of significant benefit.

For Distribution Codes (A.1.3) only Subject Indicator Codes are supported and Distribution Extensions are omitted. Distribution extensions are not widely used, and encoding ANY DEFINED BY in this specification would be difficult.

Address List Indication (A.1.11) is not supported. This complex extension is deprecated in [STANAG-4406].

Pilot Forwarding Information (A.1.13) is not supported. This complex extension is only for ACP 127 transition, and is not widely used.

Security Information Labels (A.1.16) is not supported. This extension is deprecated in favour of Annex A, which uses ESS Labels [RFC2634] which can be supported in a directly compatible manner in S/MIME [RFC5751].

## 6. Gatewaying with STANAG 4406

The header fields defined in this specification are designed to be mapped with STANAG 4406 Annex A1 heading extensions as part of a MIXER mapping according to [RFC2156]. The syntax of these headings is defined such that mapping is mechanical. OR Names should be mapped with Internet Email addresses according to [RFC2156].

This section summarizes how a gateway between [STANAG-4406] and [RFC5322] conformant to this specification operates.

If an incoming X.400 message is encoded as P772, [RFC5322] header fields MUST be generated according to this specification for all STANAG 4406 heading extensions where an equivalent header is defined in this specification. For the three heading extensions where no mapping is defined the heading extension MAY be discarded or mapped in a proprietary manner. If a Distribution Extension is encoded this MAY be discarded or represented as a comment (<CFWS>). The whole message MAY be signed according to [RFC5652]. These rules also apply to heading extensions in forwarded messages. MM-Message MUST be treated as a forwarded message for the purposes of MIXER mapping.

If an incoming SMTP message contains any of the header fields defined

in this specification, the outgoing X.400 message MUST be encoded as P772. The outgoing message MAY be encoded as P772 for other reasons, such as policy or characteristics such as the message containing a military body part. The X.400 message MAY be signed according to STANAG 4406 Annex B and Annex G. message/rfc822 body parts included in the message SHOULD be mapped to MM-Message, and the heading mapping rules applied.

Generated P772 messages SHOULD follow the following rules, generating heading extensions if needed.

a. Extended Authorization is required. If the MMHS-Extended-Authorisation-Info header field is absent, then the default value is taken from the Date: header field.

b. Primary Precedence is required if the To header field is present. If the MMHS-Primary-Precedence header field is absent, the default value is "priority".

c. Copy Precedence is required if the Cc header field is present. If the MMHS-Copy-Precedence header field is absent, then the Default value is the value of the Primary Precedence as constructed above.

d. For Message-ID fields, STANAG 4406 applies additional constraints over X.400, leading to the following rules additional to [RFC2156] which SHOULD be followed by a gateway following this specification.

    1. The local identifier MUST be at least 15 characters long. If the [RFC2156] generated value is shorter than this, then it is padded with spaces to 15 characters. This value will correctly reverse map.

    2. The OR Address part is required, and not usually generated by an [RFC2156] mapping. It is mandatory in STANAG 4406. The gateway SHOULD generate an OR Address in a manner that can be reverse mapped. It MAY use the OR Address to encode long message ids that cannot be encoded in the local identifier.

## 7. Gatewaying with ACP 127

The header fields defined in this specification include fields to carry ACP 127 specific elements of service [ACP127]. This specification does not define a mapping of these header fields to ACP 127. In the absence of this mapping, it is recommended that these heading should be mapped to STANAG 4406 and hence into ACP 127 following the Annex D (Gateway Translation) of [STANAG-4406].

## 8. IANA Considerations

IANA is requested to add the list of header fields specified in Section 3 (and its subsections) to the "Permanent Message Header Field Registry", defined by Registration Procedures for Message Header Fields [RFC3864].

## 9. Security Considerations

No security considerations are introduced by this document beyond those already inherent in use of the MMHS header fields referenced.

## 10. References

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## Appendix A. Acknowledgements

This document copies lots of text from draft-onions-x400p772-822-mapping-01.txt and STANAG 4066 (2nd Edition). So the authors of this document would like to acknowledge contributions made by the authors of these documents.

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