

Stream,Function Name (Mnemonic)	Direction
S14,F20 Generic Service Acknowledge (GSA)	M,H<-E
Description	
<p>The equipment acknowledges requested service or reports any error(s). If the service is accepted and completed at once, (i.e. SVCACK = 0) then, the required parameters for the response are listed within this message. If the service is accepted but the performance of the service takes a relatively longer time due to some physical reason, (i.e. SVCACK = 4) then, the service response will be sent with the required parameters when the service is completed (see S14,F21/F22). The determination as to whether a delayed response is acceptable is dependent upon the implementation. LINKID is set to a non-zero value if and only if additional completion reports will be sent. The data items are mapped to the service response parameter list of the applied object service. Parameters that apply to the list are described in the standard that defines the application of the service.</p>	
Structure	
<pre> L, 4 1. <SVCACK> 2. <LINKID> 3. L, n # of parameter groups 1. L, 2 1. <SPNAME₁> service parameter 1 name 2. <SPVAL₁> service parameter 1 value 2. L, 2 1. <SPNAME₂> service parameter 2 name 2. <SPVAL₂> service parameter 2 value . . n. L, 2 1. <SPNAME_n> service parameter n name 2. <SPVAL_n> service parameter n value 4. L, 2 1. <SVCACK> 2. L, p p = number of errors reported 1. L, 2 1. <ERRCODE₁> 2. <ERRTEXT₁> . . p. L, 2 1. <ERRCODE_p> 2. <ERRTEXT_p> </pre>	
Exception	
<p>If p = 0, no errors were detected. If n = 0 parameters are returned. SVCACK is specified twice in the above structure for backward compatibility with the previous structure of this message, and for consistency with other stream 14 reply messages. The values of both SVCACK data items in this structure must be equal. The above message structure (L,4) is the preferred structure for this message and must be used for new implementations. The following message structure (L,3) is included for compatibility with previous implementations and must not be used for new implementations.</p>	
Structure:	
<pre> L, 3 1. <SVCACK> 2. <LINKID> 3. L, n # of parameter groups 1. L, 2 1. <SPNAME₁> service parameter 1 name 2. <SPVAL₁> service parameter 1 value 2. L, 2 1. <SPNAME₂> service parameter 2 name 2. <SPVAL₂> service parameter 2 value . . n. L, 2 1. <SPNAME_n> service parameter n name 2. <SPVAL_n> service parameter n value </pre>	

Stream,Function Name (Mnemonic)	Direction
S14,F21 Generic Service Completion Information (GSCI)	M,H<-E,reply
<i>Description</i>	
<p>The equipment notifies the original service requestor when requested service on an object is completed, either successfully or unsuccessfully. The equipment may send required information using reply parameters. If the service was accepted and completed at once, the information was carried with the acknowledge message, that is secondary message of requesting one, and this message is not provided.</p> <p>OPID contains the value of OPID in the initial request, i.e. S14F19. LINKID is set to a non-zero value if and only if additional completion reports with the same OPID will be sent. If multi-block, it shall be preceded by the S14F23/F24 Multi-Block Inquire/Grant transaction.</p>	
<i>Structure</i>	
<pre> L, 5 1. <DATAID> 2. <OPID> 3. <LINKID> 4. L, n n = of parameter groups 1. L, 2 1. <SPNAME₁> Service parameter 1 name 2. <SPVAL₁> Service parameter 1 value 2. L, 2 1. <SPNAME₂> Service parameter 2 name 2. <SPVAL₂> Service parameter 2 value . . n. L, 2 1. <SPNAME_n> Service parameter n name 2. <SPVAL_n> Service parameter n value 5. L, 2 1. <SVCACK> 2. L, p p = number of errors reported 1. L, 2 1. <ERRCODE_p> 2. <ERRTEXT_p> </pre>	
<i>Exception</i>	
If p = 0, no errors were detected. If n = 0 no parameters are returned.	

Stream,Function Name (Mnemonic)	Direction
S14,F22 Generic Service Completion Acknowledge (GSCA)	S,H->E
<i>Description</i>	
The acknowledgement of generic Object Service Completion Information, i.e. S14F21.	
<i>Structure</i>	
<DATAACK>	
<i>Exception</i>	
None	



Stream,Function Name (Mnemonic)	Direction
S14,F23 Multi-block Generic Service Data Inquire (GSDI)	S,H<->E,reply
<i>Description</i>	
If any of Object Service messages are larger than one block, then this transaction must precede that message.	
<i>Structure</i>	
L, 2 1. <DATAID> 2. <DATALENGTH>	
<i>Exception</i>	
None	

Stream,Function Name (Mnemonic)	Direction
S14,F24 Multi-block Generic Service Data Grant (GSDG)	S,H<->E
<i>Description</i>	
Message to indicate if permission is granted to transmit a multi-block Object Service message.	
<i>Structure</i>	
<GRANT>	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S14,F25 Get Service Name Request (GSNR)	S,H->E
<i>Description</i>	
This message is used to request to list the services of specified types of owned objects. This is an operation performed on an object type rather than on object instances. Wild characters “?” and “*” may be used as a filter for object types. Equipment is not required to support wild characters.	
<i>Structure</i>	
L, 2 1. <OBJSPEC> 2. L, n n = # of object types 1. <OBJTYP ₁ > . . n. <OBJTYP _n >	
<i>Exception</i>	
If OBJSPEC is a zero-length item, no object specifier is provided.	

Stream,Function Name (Mnemonic)	Direction
S14,F26 Get Service Name Data (GSND)	S,H<-E
<i>Description</i>	
This message contains a list of the services of the requested objects.	
<i>Structure</i>	
<pre> L, 2 1. L, n n = number of object types 1. L, 2 1. <OBJTYP₁> 2. L, a a = number of attributes 1. <SVCNAME₁> . . a. <SVCNAME_a> . . n. L, 2 1. <OBJTYP_n> 2. L, b b = number of attributes 1. <SVCNAME₁> . . b. <SVCNAME_b> 2. L, 2 1. L, 2 1. <OBJACK> 2. L, p p = number of errors reported 1. L, 2 1. <ERRCODE₁> 2. <ERRTEXT₁> . . p. L, 2 1. <ERRCODE_p> 2. <ERRTEXT_p> </pre>	
<i>Exception</i>	
If p = 0, no errors were detected.	

Stream,Function Name (Mnemonic)	Direction
S14,F27 Get Service Parameter Name Request (GPNR)	S,H->E
<i>Description</i>	
This message is used to request to list the parameters of specified services of owned object. This is an operation performed on an object type rather than on object instances.	
<i>Structure</i>	
<pre> L, 3 1. <OBJSPEC> 2. <OBJTYP> 3. L, n n = # of interesting services 1. <SVCNAME₁> . . n. <SVCNAME_n> </pre>	
<i>Exception</i>	
If OBJSPEC is a zero-length item, no object specifier is provided.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S14,F28 Get Service Parameter Name Data (GPND)	S,H<-E
<i>Description</i>	
This message contains a list of the service parameters of the requested services for the specified object.	
<i>Structure</i>	
<pre> L, 2 1. L, n n = number of services of interest 1. L, 2 1. <SVCNAME₁> 2. L, a a = number of parameter names 1. <SPNAME₁> . . a. <SPNAME_a> . . n. L, 2 1. <SVCNAME_n> 2. L, b b = number of parameter names 1. <SPNAME₁> . . b. <SPNAME_b> 2. L, 2 1. <OBJACK> 2. L, p p = number of errors reported 1. L, 2 1. <ERRCODE₁> 2. <ERRTEXT₁> . . p. L, 2 1. <ERRCODE_p> 2. <ERRTEXT_p> </pre>	
<i>Exception</i>	
If p = 0, no errors were detected.	

10.19 *Stream 15 Recipe Management* — The functions in this stream are used requesting information and operations concerning recipes, recipe namespaces, and recipe executors. A recipe is an object that is transferred in sections, where a section consists of either recipe attributes, agent-specific dataset attributes, or the body of the recipe. An attribute is information concerning the recipe body, the recipe as a whole, or the application of the recipe. An attribute consists of an attribute name/attribute value pair.

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F0 Abort Transaction (S15F0)	S,H<->E
<i>Description</i>	
Same form as S1,F0.	
<i>Structure</i>	
<i>Exception</i>	



<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F1 Recipe Management Multi-block Inquire	S,H<->E,reply
<i>Description</i>	
This message requests permission to send a multi-block message based upon a maximum length of the total message.	
<i>Structure</i>	
L, 3 1. <DATAID> 2. <RCPSPEC> 3. <RMDATASIZE>	
<i>Exception</i>	
If RCPSPEC is zero-length, the multi-block message for which permission to send is requested does not contain a recipe.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F2 Recipe Management Multi-block Grant	S,H<->E
<i>Description</i>	
This message grants or denies permission to send a multi-block message.	
<i>Structure</i>	
<RMGRNT>	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F3 Recipe Namespace Action Request	S,H<->E,reply
<i>Description</i>	
This message requests that a recipe namespace be created or deleted.	
<i>Structure</i>	
L, 2 1. <RMNSSPEC> 2. <RMNSCMD>	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F4 Recipe Namespace Action Acknowledge	M,H<->E
<i>Description</i>	
This message is used to confirm whether the requested action was completed successfully or to provide error information otherwise.	
<i>Structure</i>	
L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . p. L, 2 1. <ERRCODE _p > 2. <ERRTEXT _p >	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F5 Recipe Namespace Rename Request	S,H<->E,reply
<i>Description</i>	
A request is made for a recipe namespace to be renamed.	
<i>Structure</i>	
L, 2 1. <RMNSSPEC> 2. <RMNEWS>	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F6 Recipe Namespace Rename Acknowledge	M,H<->E
<i>Description</i>	
This message is used to acknowledge or deny a request to rename a recipe namespace.	
<i>Structure</i>	
L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . p. L, 2 1. <ERRCODE _p > 2. <ERRTEXT _p >	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F7 Recipe Space Request	S,H<->E,reply
<i>Description</i>	
This message requests the amount of recipe storage available in the storage of a recipe namespace or recipe executor, as indicated by its object specifier OBJSPEC.	
<i>Structure</i>	
<OBJSPEC>	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F8 Recipe Space Data	M,H<->E
<i>Description</i>	
This message contains the amount of storage available for recipes.	
<i>Structure</i>	
L, 2 1. <RMSPACE> 2. L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . p. L, 2 1. <ERRCODE _p > 2. <ERRTEXT _p >	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F9 Recipe Status Request	S,H<->E,reply
<i>Description</i>	
This message is used to request the status of a recipe and the next available numeric version for that recipe class and name.	
<i>Structure</i>	
<RCPSPEC>	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F10 Recipe Status Data	M,H<->E
<i>Description</i>	
This message contains the protected status of the recipe and the next available version number for that recipe class and name.	
<i>Structure</i>	
L, 3 1. <RCPSTAT> 2. <RCPVERS> 3. L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . p. L, 2 1. <ERRCODE _p > 2. <ERRTEXT _p >	
<i>Exception</i>	
RCPVERS is a zero-length item if and only if the recipe does not exist. p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F11 Recipe Version Request	S,H<->E,reply
<i>Description</i>	
This message is used to request the best version of a recipe for the specified agent.	
<i>Structure</i>	
L, 4 1. <RMNSSPEC> 2. <RCPCLASS> 3. <RCPNAME> 4. <AGENT>	
<i>Exception</i>	
If item 2 is zero length, the recipe class PROCESS is indicated. If item 4 is a zero-length item, no agent is specified.	

Stream,Function Name (Mnemonic)	Direction
S15,F12 Recipe Version Data	M,H<->E
<i>Description</i>	
This message contains the recommended version.	
<i>Structure</i>	
L, 3 <ul style="list-style-type: none"> 1. <AGENT> 2. <RCPVERS> 3. L, 2 <ul style="list-style-type: none"> 1. <RMACK> 2. L, p <ul style="list-style-type: none"> 1. L, 2 <ul style="list-style-type: none"> 1. <ERRCODE₁> 2. <ERRTEXT₁> . . p. L, 2 <ul style="list-style-type: none"> 1. <ERRCODE_p> 2. <ERRTEXT_p> 	
<i>Exception</i>	
If AGENT is a zero-length item in the request, it shall also be a zero-length item in the reply. If it is not zero-length in the request, and it is of zero-length in the reply, then no qualifying recipe was found specific to that equipment. p = 0 if and only if RMACK indicates no errors.	

Stream,Function Name (Mnemonic)	Direction
S15,F13 Recipe Create Request	M,H<->E,reply
<i>Description</i>	
This message is used to create or modify a recipe body. If multi-block, it shall be preceded by the S15,F1/F2 inquire/grant transaction.	
<i>Structure</i>	
L, 5 <ul style="list-style-type: none"> 1. <DATAID> 2. <RCPUPDT> 3. <RCPSPEC> 4. L, m <ul style="list-style-type: none"> 1. L, 2 <ul style="list-style-type: none"> 1. <RCPATTRID₁> 2. <RCPATTRDATA₁> . . m. L, 2 <ul style="list-style-type: none"> 1. <RCPATTRID_m> 2. <RCPATTRDATA_m> 5. <RCPBODY> 	
<i>Exception</i>	
RCPBODY may be of zero length.	



<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F14 Recipe Create Acknowledge	M,H<->E
<i>Description</i>	
This message is used to acknowledge that a recipe has been created or updated with the body sent in the request.	
<i>Structure</i>	
<pre>L, 2 1. <RMACK> 2. L, 2 1. L, 2 1. <ERRCODE₁> 2. <ERRTEXT₁> . . p. L, 2 1. <ERRCODE_p> 2. <ERRTEXT_p></pre>	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	

Stream,Function Name (Mnemonic)	Direction
S15,F15 Recipe Store Request	M,H<->E,reply
<i>Description</i>	
This message is used to send a recipe, or one or more recipe sections, to a recipe namespace. If multi-block, it shall be preceded by the S15,F1/F2 inquire/grant transaction.	
<i>Structure</i>	
<pre> L, 4 1. <DATAID> 2. <RCPSPEC> 3. <RCPSECCODE> 4. L,q (q = 1,2,3) 1. L,r (r = 0 or 2) 1. <RCPSECNM> 2. L,g (g = # generic attributes) 1. L,2 1. <RCPATTRID₁> 2. <RCPATTRDATA₁> . . g. L,2 1. <RCPATTRID_g> 2. <RCPATTRDATA_g> 2. <RCPBODY> 3. L,m (m = # agent-specific datasets) 1. L,2 1. <RCPSECNM₁> 2. L,a 1. L,2 1. <RCPATTRID₁₁> 2. <RCPATTRDATA₁₁> . . a. L,2 1. <RCPATTRID_{1a}> 2. <RCPATTRDATA_{1a}> . . m. L,2 1. <RCPSECNM_m> 2. L,b 1. L,2 1. <RCPATTRID_{m1}> 2. <RCPATTRDATA_{m1}> . . b. L,2 1. <RCPATTRID_{mb}> 2. <RCPATTRDATA_{mb}> </pre>	
<i>Exception</i>	
RCPBODY is a zero-length item when the body is omitted. If g = 0, no generic attributes are transferred and RCPBODY shall be a zero-length item. If m = 0, no agent-specific datasets are transferred.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F16 Recipe Store Acknowledge	M,H<->E
<i>Description</i>	
This message is used to acknowledge that the specified recipe has been stored as requested or to indicate the error(s).	
<i>Structure</i>	
<pre> L, 2 1. <RECPSECCODE> 2. L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE₁> 2. <ERRTEXT₁> . . p. L, 2 1. <ERRCODE_p> 2. <ERRTEXT_p> </pre>	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F17 Recipe Retrieve Request	S,H<->E,reply
<i>Description</i>	
This message is used to get a recipe, or one or more recipe sections, from a recipe namespace.	
<i>Structure</i>	
<pre> L, 2 1. <RCPSPEC> 2. <RCPSECCODE> </pre>	
<i>Exception</i>	
None	

Stream,Function Name (Mnemonic)	Direction
S15,F18 Recipe Retrieve Data	M,H<->E
Description	
This message is used to acknowledge that the specified recipe, or recipe sections, have been set as requested, or to indicate the error(s).	
Structure	
<pre> L, 2 1. L,q (q = 1,2,3) 1. L,r (r = 0 or 2) 1. <RCPSECNM> 2. L,g (g = # generic attributes) 1. L,2 1. <RCPATTRID₁> 2. <RCPATTRDATA₁> . . g. L,2 1. <RCPATTRID_g> 2. <RCPATTRDATA_g> 2. <RCPBODY> 3. L,m (m = # agent-specific datasets) 1. L,2 1. <RCPSECNM₁> 2. L,a 1. L,2 1. <RCPATTRID₁₁> 2. <RCPATTRDATA₁₁> . . a. L,2 1. <RCPATTRID_{1a}> 2. <RCPATTRDATA_{1a}> . . m. L,2 1. <RCPSECNM_m> 2. L,b 1. L,2 1. <RCPATTRID_{m1}> 2. <RCPATTRDATA_{m1}> . . b. L,2 1. <RCPATTRID_{mb}> 2. <RCPATTRDATA_{mb}> 2. L,2 1. <RMACK> 2. L,p 1. L,2 1. <ERROCODE₁> 2. <ERRTEXT₁> . . p. L,2 1. <ERRCODE_p> 2. <ERRTEXT_p> </pre>	
Exception	
If r = 0, no generic attributes are transferred and RCPBODY shall be a zero-length item. If m = 0, no agent-specific datasets are transferred. p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F19 Recipe Rename Request	S,H<->E,reply
<i>Description</i>	
This message is used to request that a recipe be copied to, or renamed to, a recipe with a new identifier.	
<i>Structure</i>	
L, 3 1. <RCPSPEC> 2. <RCPRENAME> 3. <RCPNEWID>	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F20 Recipe Rename Acknowledge	M,H<->E
<i>Description</i>	
This message acknowledges the request to copy or rename a recipe and indicates whether the action was successfully performed or errors that occurred.	
<i>Structure</i>	
L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . p. L, 2 1. <ERRCODE _p > 2. <ERRTEXT _p >	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F21 Recipe Action Request	M,H<->E,reply
<i>Description</i>	
This message is used to acknowledge the request to perform an action in one or more recipes within a namespace.	
<i>Structure</i>	
L, 6 1. <DATAID> 2. <RCPCMD> 3. <RMNSSPEC> 4. <OPID> 5. <AGENT> 6. L, n 1. <RCPID ₁ > . . n. <RCPID _n >	
<i>Exception</i>	
AGENT may be a zero-length item except for requests for certify, de-certify, download, and upload.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F22 Recipe Action Acknowledge	M,H<->E
<i>Description</i>	
This message is used to acknowledge the request to originate a new recipe.	
<i>Structure</i>	
L, 4 <ul style="list-style-type: none"> 1. <AGENT> 2. <LINKID> 3. <RCPCMD> 4. L, 2 <ul style="list-style-type: none"> 1. <RMACK> 2. L, p <ul style="list-style-type: none"> 1. L, 2 <ul style="list-style-type: none"> 1. <ERRCODE₁> 2. <ERRTEXT₁> . . p. L, 2 <ul style="list-style-type: none"> 1. <ERRCODE_p> 2. <ERRTEXT_p> 	
<i>Exception</i>	
LINKID is zero if and only if all requested actions have been completed. p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F23 Recipe Descriptor Request	M,H<->E,reply
<i>Description</i>	
This message is used to request the descriptors of a list of the specified recipes. If multi-block, it must be preceded by the S15,F1/F2 inquire/grant transaction. OBJSPEC is the object specifier of either a recipe namespace of a recipe executor.	
<i>Structure</i>	
L, 3 <ul style="list-style-type: none"> 1. <DATAID> 2. <OBJSPEC> 3. L, n <ul style="list-style-type: none"> 1. <RCPID₁> . . n. <RCPID_n> 	
<i>Exception</i>	
None	

Stream,Function Name (Mnemonic)	Direction
S15,F24 Recipe Descriptor Data	M,H<->E
<i>Description</i>	
This message returns the requested descriptors in the same order as requested.	
<i>Structure</i>	
<pre> L, 2 1. L, n (n = number of recipes from request) 1. L, a (descriptors for recipe #1) 1. L, r (r = 0 or 3) (1st component descriptor) 1. <RCPDESCNM₁₁> 2. <RCPDESCTIME₁₁> 3. <RCPDESCLTH₁₁> . . a. L, r (r = 0 or 3) 1. <RCPDESCNM_{1a}> 2. <RCPDESCTIME_{1a}> 3. <RCPDESCLTH_{1a}> . . n. L, b (descriptors for recipe #n) 1. L, r (r = 0 or 3) (1st component descriptor) 1. <RCPDESCNM_{n1}> 2. <RCPDESCTIME_{n1}> 3. <RCPDESCLTH_{n1}> . . b. L, r (r = 0 or 3) 1. <RCPDESCNM_{nb}> 2. <RCPDESCTIME_{nb}> 3. <RCPDESCLTH_{nb}> 2. L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE₁> 2. <ERRTEXT₁> . . p. L, 2 1. <ERRCODE_p> 2. <ERRTEXT_p> </pre>	
<i>Exception</i>	
A zero-length recipe descriptor (r = 0) means that the specified recipe does not exist (could not be located). p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F25 Recipe Parameter Update Request	M,H<->E,reply
<i>Description</i>	
This message is used to update the variable parameter definitions for a specific agent. If multi-block, it must be preceded by the S15,F1/F2 inquire/grant transaction.	
<i>Structure</i>	
L, 4 1. <DATAID> 2. <RMNSSPEC> 3. <AGENT> 4. L, n 1. L, 3 1. <RCPPARNM ₁ > 2. <RCPPARVAL ₁ > 3. <RCPPARRULE ₁ > . . n. L, 3 1. <RCPPARNM _n > 2. <RCPPARVAL _n > 3. <RCPPARRULE _n >	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F26 Recipe Parameter Update Acknowledge	M, H<->E
<i>Description</i>	
This message indicates the successful performance of the request or otherwise indicates the nature of error(s) that occurred.	
<i>Structure</i>	
L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . p. L, 2 1. <ERRCODE _p > 2. <ERRTEXT _p >	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	

Stream,Function Name (Mnemonic)	Direction
S15,F27 Recipe Download Request	M,H->E,reply
<i>Description</i>	
This message is used to send a recipe to a recipe executor. If multi-block, it shall be preceded by the S15,F1/S15,F2 inquire/grant transaction.	
<i>Structure</i>	
L, 5 1. <DATAID> 2. <RCPOWCODE> 3. <RCPSPEC> 4. L, m 1. L, 2 1. <RCPATTRID ₁ > 2. <RCPATTRDATA ₁ > . . m. L, 2 1. <RCPATTRID _m > 2. <RCPATTRDATA _m > 5. <RCPBODY>	
<i>Exception</i>	
None	

Stream,Function Name (Mnemonic)	Direction
S15,F28 Recipe Download Acknowledge	M,H<-E
<i>Description</i>	
This message is used to acknowledge that a recipe has been received by the recipe executor. If the recipe was successfully verified, the results are returned to the sender. RCPID contains the identifier of a derived object form recipe if created during verification.	
<i>Structure</i>	
L, 3 1. <RCPID> 2. L, n (n = # of attributes) 1. L, 2 1. <RCPATTRID ₁ > 2. <RCPATTRDATA ₁ > . . n. L, 2 1. <RCPATTRID _n > 2. <RCPATTRDATA _n > 3. L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . p. L, 2 1. <ERRCODE _p > 2. <ERRTEXT _p >	
<i>Exception</i>	
If item is a zero length item, no derived object form recipe was originated. n = 0 if and only if the recipe was not verified or failed verification. p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F29 Recipe Verify Request	M,H->E,reply
<i>Description</i>	
This message is used to request verification of one or more recipes by a recipe executor. If multi-block, it shall be preceded by the S15F1,F2 inquire/grant transaction. The operation identifier OPID, used where multiple verification requests may be outstanding, may be zero if no further verifications will be requested before all current verification requests are completed by the recipe executor. Otherwise, OPID is generated to be unique for the requestor. RESPEC is the object specifier for the recipe executor.	
<i>Structure</i>	
L, 4 1. <DATAID> 2. <OPID> 3. <RESPEC> 4. L, m 1. <RCPID ₁ > . . m. <RCPID _m >	
<i>Exception</i>	
If RESPEC is a zero length item, the target is the recipient of the message.	

Stream,Function Name (Mnemonic)	Direction
S15,F30 Recipe Verify Acknowledge	M,H<-E
<i>Description</i>	
This message is used to acknowledge the request to verify one or more recipes. If a single recipe verification was requested and the recipe was successfully verified, the results are returned to the sender in this message, and RCPID contains the identifier of a derived object form recipe if created during verification. If multiple recipe verifications were requested, then LINKID shall be non-zero.	
<i>Structure</i>	
<pre> L, 5 1. <OPID> 2. <LINKID> 3. <RCPID> 4. L, n (n = # attributes) 1. L, 2 1. <RCPATTRID₁> 2. <RCPATTRDATA₁> . . n. L, 2 1. <RCPATTRID_n> 2. <RCPATTRDATA_n> 5. L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE₁> 2. <ERRTEXT₁> . . p. L, 2 1. <ERRCODE_p> 2. <ERRTEXT_p> </pre>	
<i>Exception</i>	
LINKID is zero if and only if a single recipe verification was requested and has been completed. If item 3 is zero length item, no derived object form recipe was originated. n = 0 if and only if the recipe was not verified or failed verification. p = 0 if and only if RMACK indicates no errors.	

Stream,Function Name (Mnemonic)	Direction
S15,F31 Recipe Upload Request	S,H->E,reply
<i>Description</i>	
This message is used to request an execution recipe from a recipe executor.	
<i>Structure</i>	
<RCPSPEC>	
<i>Exception</i>	
None	

Stream,Function Name (Mnemonic)	Direction
S15,F32 Recipe Upload Data	M,H<-E
<i>Description</i>	
This message is used to send an execution recipe from a recipe executor.	
<i>Structure</i>	
<pre> L, 4 1. <RCPSPEC> 2. L, m (m = # attributes) 1. L, 2 1. <RCPATTRID₁> 2. <RCPATTRDATA₁> . . m. L, 2 1. <RCPATTRID_m> 2. <RCPATTRDATA_m> 3. <RCPBODY> 4. L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE₁> 2. <ERRTEXT₁> . . p. L, 2 1. <ERRCODE_p> 2. <ERRTEXT_p> </pre>	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	

Stream,Function Name (Mnemonic)	Direction
S15,F33 Recipe Select Request	M,H->E,reply
<i>Description</i>	
This message is used to request the selection of one or more execution recipes. If multi-block, it shall be preceded by the S15,F1/S15,F2 inquire/grant transaction.	
<i>Structure</i>	
<pre> L, 3 1. <DATAID> 2. <RESPEC> 3. L,r (r = # selections) 1. L,2 1. <RCPID₁> (1st recipe selection) 2. L,p (p = # parameter settings for 1st recipe) 1. L,2 1. <RCPPARM₁₁> 2. <RCPPARVAL₁₁> . . p. L,2 1. <RCPPARM_{1p}> 2. <RCPPARVAL_{1p}> . . r. L,2 1. <RCPID_r> (rth recipe selection) 2. L,s (s = # parameter settings for rth recipe) 1. L,2 1. <RCPPARM_{r1}> 2. <RCPPARVAL_{r1}> . . s. L,2 1. <RCPPARM_{rs}> 2. <RCPPARVAL_{rs}> </pre>	
<i>Exception</i>	
If the list of parameter settings for a recipe selection is of zero length, then no parameter settings are specified for the corresponding recipe.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F34 Recipe Select Acknowledge	M,H<-E
<i>Description</i>	
This message is used to acknowledge the request for recipe selection.	
<i>Structure</i>	
L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . p. L, 2 1. <ERRCODE _p > 2. <ERRTEXT _p >	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F35 Recipe Delete Request	M,H->E,reply
<i>Description</i>	
This message is used to request that one or more recipes be deleted or deselected. If multi-block, it shall be preceded by the S15,F1/S15,F2 inquire/grant transaction.	
<i>Structure</i>	
L, 4 1. <DATAID> 2. <RESPEC> 3. <RCPDEL> 4. L, n (n = # recipes deselected) 1. <RCPID ₁ > . . n. <RCPID _n >	
<i>Exception</i>	
If n = 0 and recipes are to be deselected (RCPDEL = 1), then all currently-selected recipes are indicated.	



<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F36 Recipe Delete Acknowledge	M,H<-E
<i>Description</i>	
This message is used to acknowledge the request that recipes be deleted or deselected.	
<i>Structure</i>	
L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . p. L, 2 1. <ERRCODE _p > 2. <ERRTEXT _p >	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F37 DRNS Segment Approve Action Request	S,H<->E,reply
<i>Description</i>	
This message is sent by a distributed recipe namespace manager to an attached distributed recipe namespace segment to approve an action previously requested by the segment. If multi-block, it shall be preceded by the S15,F1/S15,F2 inquire/grant transaction.	
<i>Structure</i>	
L, 6 1. <RMSEGSPEC> 2. <OBJTOKEN> 3. <RMGRNT> 4. <OPID> 5. <RCPID> 6. <RMCHGTYPE>	
<i>Exception</i>	
None	

Stream,Function Name (Mnemonic)	Direction
S15,F38 DRNS Segment Approve Action Acknowledge	M,H<->E
<i>Description</i>	
This message is used to acknowledge or deny the approve action request.	
<i>Structure</i>	
L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . p. L, 2 1. <ERRCODE _p > 2. <ERRTEXT _p >	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	

Stream,Function Name (Mnemonic)	Direction
S15,F39 DRNS Recorder Segment Request	M,H<->E,reply
<i>Description</i>	
This message is used by the distributed recipe namespace manager to request that an attached recorder create or delete a segment specifier record. If multi-block, it shall be preceded by the S15,F1/S15,F2 inquire/grant transaction.	
<i>Structure</i>	
L, 5 1. <DATAID> 2. <RMNSCMD> 3. <RMRECSPEC> 4. <RMSEGSPEC> 5. <OBJTOKEN>	
<i>Exception</i>	
None	

Stream,Function Name (Mnemonic)	Direction
S15,F40 DRNS Recorder Segment Acknowledge	M,H<->E
<i>Description</i>	
This message is used to acknowledge the request to add or delete a segment specifier record.	
<i>Structure</i>	
L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . p. L, 2 1. <ERRCODE _p > 2. <ERRTEXT _p >	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	

Stream,Function Name (Mnemonic)	Direction
S15,F41 DRNS Recorder Modify Request	M,H<->E,reply
<i>Description</i>	
This message is used by a distributed recipe namespace manager to a recorder to store or delete a change request record. If multi-block, it shall be preceded by the S15,F1/F2 inquire/grant transaction.	
<i>Structure</i>	
L, 5 1. <DATAID> 2. <RMRECSPEC> 3. <OBJTOKEN> 4. <RMNSCMD> 5. L, c (c = 1 or 7) 1. <RCPID> 2. <RCPNEWID> 3. <RMSEGSPEC> 4. <RMCHGTYPE> 5. <OPID> 6. <TIMESTAMP> 7. <RMREQUESTOR>	
<i>Exception</i>	
If RMNSCMD = create, then c = 7, otherwise c = 1.	

Stream,Function Name (Mnemonic)	Direction
S15,F42 DRNS Recorder Modify Acknowledge	M,H<->E
<i>Description</i>	
This message is used to acknowledge a request to store or delete a change request.	
<i>Structure</i>	
L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . p. L, 2 1. <ERRCODE _p > 2. <ERRTEXT _p >	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	



<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F43 DRNS Get Change Request	M,H<->E,reply
<i>Description</i>	
This message is used to request a distributed recipe namespace recorder or manager to return change requests records for a specific recipe or assigned to a specific segment. If multi-block, it shall be preceded by the S15,F1/F2 inquire/grant transaction.	
<i>Structure</i>	
L, 3	
1. <DATAID> 2. <OBJSPEC> 3. <TARGETSPEC>	
<i>Exception</i>	
If TARGETSPEC is omitted, OBJSPEC identifies a recipe.	

Stream, Function Name (Mnemonic)	Direction
S15.F44 DRNS Get Change Request Data	M,H<->E
Description	
This message is used to return the specified change request records.	
Structure	
<pre> L, 2 1. L, n n = # change requests 1. L, 7 1. <RCPID₁> 2. <RCPNEWID₁> 3. <RMSEGSPEC₁> 4. <RMCHGTYPE₁> 5. <OPID₁> 6. <TIMESTAMP₁> 7. <RMREQUESTOR₁> . . n. L, 7 1. <RCPID_n> 2. <RCPNEWID_n> 3. <RMSEGSPEC_n> 4. <RMCHGTYPE_n> 5. <OPID_n> 6. <TIMESTAMP_n> 7. <RMREQUESTOR_n> 2. L, 2 1. <RMACK> 2. L, p 1. L, 2 1. <ERRCODE₁> 2. <ERRTEXT₁> . . p. L, 2 1. <ERRCODE_p> 2. <ERRTEXT_p> </pre>	
Exception	
If n = 0, no change records were found matching the specification. p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F45 DRNS Manager Segment Change Approval Request	M,H<->E,reply
<i>Description</i>	
This message is sent to a distributed recipe namespace manager by an attached distributed recipe namespace segment to request approval for a specific type of change to a recipe. If multi-block, it shall be preceded by the S15,F1/F2 inquire/grant transaction.	
<i>Structure</i>	
L, 4 1. <DATAID> 2. <RCPSPEC> 3. <RCPNEWID> 4. <RMCHGTYPE>	
<i>Exception</i>	
RCPNEWID is a zero-length item except where RMCHGTYPE specifies a copy or rename change.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F46 DRNS Manager Segment Approval Acknowledge	S,H<->E
<i>Description</i>	
This message is used to acknowledge the request to change a recipe.	
<i>Structure</i>	
L, 3 1. <RMCHGTYPE> 2. <RMGRNT> 3. <OPID>	
<i>Exception</i>	
OPID is zero if and only if RMGRNT indicates the change is denied.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F47 DRNS Manager Rebuild Request	M,H<->E,reply
<i>Description</i>	
This message requests a distributed recipe namespace manager specified in OBJSPEC to rebuild a distributed recipe namespace. Either a distributed recipe namespace recorder or a list of distributed recipe namespace segment specifiers shall be provided. If multi-block, it shall be preceded by the S15,F1/F2 inquire/grant transaction.	
<i>Structure</i>	
L, 5 1. <DATAID> 2. <OBJSPEC> 3. <RMNSSPEC> 4. <RMRECSPEC> 5. L, n 1. <RMSEGSPEC ₁ > . . n. <RMSEGSPEC _n >	
<i>Exception</i>	
If RMRECSPEC is a non-zero length item, then n is zero. If RMRECSPEC is a zero length item, then n is non-zero.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F48 DRNS Manager Rebuild Acknowledge	M,H<->E
<i>Description</i>	
This message is used to acknowledge the request to rebuild a distributed recipe namespace.	
<i>Structure</i>	
L, 2 1. <RMACK> 2. L, P 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . p. L, 2 1. <ERRCODE _p > 2. <ERRTEXT _p >	
<i>Exception</i>	
p = 0 if and only if RMACK indicates no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F49 Large Recipe Download Request (LRDR)	S,H->E,reply
<i>Description</i>	
This is a request by the host for the equipment to request the download of a recipe via the Stream 13 Data Set Transfer protocol. The Data Set name, DSNAME, is the text string identifier of the recipe, RCPSPEC. The Data Set is subsequently transferred as a Stream with the following internal SECSII structured data:	
L, 4 1. <RCPSPEC> 2. <DATAID> 3. L, m (m = # of attributes) 1. L, 2 1. <RCPATTRID ₁ > 2. <RCPATTRDATA ₁ > . . m. L, 2 1. <RCPATTRID _m > 2. <RCPATTRDATA _m > 4. <RCPBODY>	
<i>Structure</i>	
L, 2 1. <DSNAME> 2. <RCPOWCODE>	
<i>Exception</i>	
None	



<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F50 Large Recipe Download Acknowledge (LRDA)	S,H<-E
<i>Description</i>	
Acknowledge or error. A returned status of “accepted” means only that the message is understood. Upon completion of the large recipe download request (Stream 13 Data Set transfer scenario) the equipment initiates a separate verification transaction (S15,F53/S15,F54) that provides the result of the verification.	
<i>Structure</i>	
<ACKC15>	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F51 Large Recipe Upload Request (LRUR)	S,H->E,reply
<i>Description</i>	
This is a request by the host for the equipment to request the host to upload a recipe via the Stream 13 Data Set Transfer protocol. The Data Set name, DSNAME, is the text string identifier of the recipe, RCPSPEC. The Data Set is subsequently transferred as a Stream with the following internal SECSII structured data:	
<pre> L, 3 1. <RCPSPEC> 2. L,m (m = # of attributes) 1. L,2 1. <RCPATTRID₁> 2. <RCPATTRDATA₁> . . m. L,2 1. <RCPATTRID_m> 2. <RCPATTRDATA_m> 3. <RCPBODY> </pre>	
<i>Structure</i>	
<DSNAME>	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F52 Large Recipe Upload Acknowledge (LRUA)	S,H<-E
<i>Description</i>	
Acknowledge or error. A returned status of “accepted” means only that the message is understood. The completion of the request is signaled by an event report.	
<i>Structure</i>	
<ACKC15>	
<i>Exception</i>	
It is possible to use the ACKC15 code “command will be performed with completion signaled later” for this message.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F53 Recipe Verification Send (RVS)	M,H<-E,reply
<i>Description</i>	
This message indicates to the host that a large recipe that was transferred via Stream 13 Data Set Transfer Protocol had been received and checked by the equipment. RCPID contains the identifier of a derived object form recipe if created during verification. The result of the check is specified by the list of errors. An empty error list indicates no errors were found in the recipe. The equipment is responsible for sending a single copy of this message to the host after any reception of a recipe through S15,F49.	
<i>Structure</i>	
<pre> L, 3 1. <RCPSPEC> 2. <RCPID> 3. L, 2 1. <RMACK> 2. L, n (n = number of errors being reported) 1. L, 2 1. <ERRCODE₁> 2. <ERRTEXT₁> . n. L, 2 1. <ERRCODE_n> 2. <ERRTEXT_n> </pre>	
<i>Exception</i>	
n = 0 if and only if RMACK indicates no error. If RCPSEPC is a zero length item, then the recipe was not verified or failed verification. If RCPID is zero length, then no derived object form recipe was originated.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S15,F54 Recipe Verification Acknowledge (RVA)	S,H->E
<i>Description</i>	
Reply by host to equipment providing response to Recipe Verification Send (RVS).	
<i>Structure</i>	
Header only	
<i>Exception</i>	
None	

10.20 Steam 16 Processing Management — This stream provides protocol for a set of messages that enable the control of material processing at equipment and equipment resources. Control is implemented by supporting two job types; the control job and the process job. A process job is a single unit of work that ensures that the appropriate processing is applied to a particular material by a processing resource. The Process Job provides a widely applicable supervisory control capability for automated processing of material in equipment, irrespective of the particular process being used. The Process Job creates a transient link between the three elements of the manufacturing process; the first is the material to be processed. The second is the equipment on which the process will occur. The third is the process specification, a Process Recipe. When a Process Job has completed, it ceases to exist; its Process Job ID is no longer valid. The control job is used to group a set of related process jobs. The group is logically related from the host's viewpoint. For instance; if a carrier contains multiple lots, then the process jobs for each lot (in the carrier) could be included in the control job specification. Control jobs also provide mechanisms for specifying the destination for processed material.



<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F0 Abort Transaction (S16F0)	S,H<->E
<i>Description</i>	
Same form as S1F0	
<i>Structure</i>	
<i>Exception</i>	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F1 Multi-block Process Job Data Inquire (PRJI)	S,H->E,reply
<i>Description</i>	
If any of Processing Management messages are larger than one block, then this transaction must precede that message.	
<i>Structure</i>	
L, 2	
1. <DATAID>	
2. <DATALENGTH>	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F2 Multi-block Process Job Data Grant (PRJG)	S,H<-E
<i>Description</i>	
Message to indicate if permission is granted to transmit a multi-block Job Data message.	
<i>Structure</i>	
<GRANT>	
<i>Exception</i>	
None	

Stream,Function Name (Mnemonic)	Direction
S16,F3 Process Job Create Request (PRJCR)	M,H->E,reply
<i>Description</i>	
The purpose of this message is to request material to be processed on a Process Module.	
<i>Structure</i>	
L, 5 1. <DATAID> 2. <MF> 3. L, n 1. <MID ₁ > . . n. <MID _n > 4. L, 3 1. <PRRECIPEMETHOD> 2. <RCPSPEC> 3. L, m (m = {c, 2}) 1. L, 2 1. <RCPPARNM ₁ > 2. <RCPPARVAL ₁ > . . m. L, 2 1. <RCPPARNM _m > 2. <RCPPARVAL _m > 5. <PRPROCESSSTART>	
<i>Exception</i>	
For the m length list m = 0 may be allowed value depending on the value of PRRECIPEMETHOD.	

Stream,Function Name (Mnemonic)	Direction
S16,F4 Process Job Create Acknowledge (PRJCA)	S,H<-E
<i>Description</i>	
Acknowledge or report error in the creation of a Process Job.	
<i>Structure</i>	
L, 2 1. <PRJOBID> 2. L, 2 1. <ACKA> 2. L, n 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . . n. L, 2 1. <ERRCODE _n > 2. <ERRTEXT _n >	
<i>Exception</i>	
This list may be zero length, generally the case when ACKA indicates success. When ACKA indicates a create failure, the equipment may supply one or more ERRCODEs.	

Stream,Function Name (Mnemonic)	Direction
S16,F5 Process Job Command Request (PRJCMDR)	M,H->E,reply
<i>Description</i>	
Send a job control command to a processing job.	
<i>Structure</i>	
L, 4 1. <DATAID> 2. <PRJOBID> 3. <PRCMDNAME> 4. L, n 1. L, 2 1. <CPNAME ₁ > 2. <CPVAL ₁ > . . n. L, 2 1. <CPNAME _n > 2. <CPVAL _n >	
<i>Exception</i>	
The CPNAME, CPVAL pairs are command parameter identifiers and values; n = 0 is valid for some commands (PRCMDNAME).	

Stream,Function Name (Mnemonic)	Direction
S16,F6 Process Job Command Acknowledge (PRJCMDA)	S,H<-E
<i>Description</i>	
The processing service sends its confirmation for receipt of a command request.	
<i>Structure</i>	
L, 2 1. <PRJOBID> 2. L, 2 1. <ACKA> 2. L, n (n = {0,n}) 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . n. L, 2 1. <ERRCODE _n > 2. <ERRTEXT _n >	
<i>Exception</i>	
This list n may be zero length.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F7 Process Job Alert Notify (PRJA)	S,H<-E,[reply]
<i>Description</i>	
The processing service may notify the controlling entity of important events. The Process Job Milestones only assume small number of different values. However, the conditions under which a process job meets one of these milestones may vary. For instance, a Job may reach Job Complete because the Process was Aborted. By using item 4, the status of the Alert (PRJOBMILESTONE) can be indicated. See the list of Error Codes for Processing in Data Item Dictionary.	
<i>Structure</i>	
L, 4 <ul style="list-style-type: none"> 1. <TIMESTAMP> 2. <PRJOBID> 3. <PRJOBMILESTONE> 4. L, 2 <ul style="list-style-type: none"> 1. <ACKA> 2. L, n (n = {0,n}) <ul style="list-style-type: none"> 1. L, 2 <ul style="list-style-type: none"> 1. <ERRCODE₁> 2. <ERRTEXT₁> . . n. L, 2 <ul style="list-style-type: none"> 1. <ERRCODE_n> 2. <ERRTEXT_n> 	
<i>Exception</i>	
The list n may be zero length.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F8 Process Job Alert Confirm (PRJAC)	S,H->E
<i>Description</i>	
Host confirms receipt of Process Job Alert message from the equipment.	
<i>Structure</i>	
Header only	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F9 Process Job Event Notify (PRJE)	S,H<-E,[reply]
<i>Description</i>	
Send Processing Job related event to the controlling entity.	
<i>Structure</i>	
L, 4 1. <PREVENTID> 2. <TIMESTAMP> 3. <PRJOBID> 4. L, n 1. L, 2 1. <VID ₁ > 2. <V ₁ > . . n. L, 2 1. <VID _n > 2. <V _n >	
<i>Exception</i>	
The VID, V pairs are variable data identifiers and values; exceptions n = 0 is valid for some events (PREVENTID).	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F10 Process Job Event Confirm (PRJEC)	S,H->E
<i>Description</i>	
Host confirms receipt of S16,F9 message to equipment.	
<i>Structure</i>	
Header only	
<i>Exception</i>	
None	

Stream,Function Name (Mnemonic)	Direction
S16,F11 PRJobCreateEnh	M,H->E,reply
<i>Description</i>	
Request equipment to create a Process Job with the given PRJOBID. If multi-block, this message must be preceded by the S16,F1/F2 transaction.	
<i>Structure</i>	
<pre> L, 7 1. <DATAID> 2. <PRJOBID> 3. <MF> 4a. L,n [MF = carrier, n = # of carriers] 1. L,2 1. <CARRIERID₁> 2. L,j [j = # of slots, may be implemented as an array] 1. <SLOTID₁> 2. <SLOTID₂> . . j. <SLOTID_j> . n. L,2 1. <CARRIERID_n> 2. L,j [j = # of slots, may be implemented as an array] 1. <SLOTID₁> 2. <SLOTID₂> . . j. <SLOTID_j> 4b. L,n [MF = substrate] 1. <MID₁> . . n. <MID_n> 5. L,3 1. <PRECIPEMETHOD> 2. <RCPSPEC> 3. L,m [m = # recipe parameters] 1. L,2 1. <RCPPARNM₁> 2. <RCPPARVAL₁> . m. L,2 1. <RCPPARNM_m> 2. <RCPPARVAL_m> 6. <PRPROCESSSTART> 7. <PRPAUSEEVENT> </pre>	
<i>Exception</i>	
The list for specifying material (item 4a and 4b) is empty (L,0 instead of L,n), when no material is specified for the process job. The form of data item 4(a or b) depends on the value in MF.	

Stream,Function Name (Mnemonic)	Direction
S16,F12 PRJobCreateEnh Acknowledge	S,H<-E
<i>Description</i>	
This message acknowledges the request and reports any errors in the creation of a process job.	
<i>Structure</i>	
L, 2 1. <PRJOBID> 2. L, 2 1. <ACKA> 2. L, n 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . n. L, 2 1. <ERRCODE _n > 2. <ERRTEXT _n >	
<i>Exception</i>	
If n = 0, no errors exist.	

Stream,Function Name (Mnemonic)	Direction
S16,F13 PRJobDuplicateCreate	M,H->E,reply
<i>Description</i>	
Not used.	
<i>Structure</i>	
<i>Exception</i>	

Stream,Function Name (Mnemonic)	Direction
S16,F14 PRJobDuplicateCreate Acknowledge	S,H<-E
<i>Description</i>	
Not used.	
<i>Structure</i>	
<i>Exception</i>	



Stream,Function Name (Mnemonic)	Direction
S16,F15 PRJobMultiCreate	M,H->E,reply
Description	
Use this single message to Create Multiple Process Jobs, each of which may be unique in its association of material to process recipe. If multi-block, this message must be preceded by the S16,F1/F2 transaction.	
Structure	
<pre> L,2 1. <DATAID> 2. L,p [p = # of process jobs being created] 1. L,6 1. <PRJOBID₁> 2. <MF₁> 3a. L,n [MF = carrier, n = # of carriers] 1. L,2 1. <CARRIERID₁> 2. L,j [j = # of slots, may be implemented as an array] 1. <SLOTID₁> 2. <SLOTID₂> . . j. <SLOTID_j> . n. L,2 1. <CARRIERID_n> 2. L,j [j = # of slots, may be implemented as an array] 1. <SLOTID₁> 2. <SLOTID₂> . . j. <SLOTID_j> 3b. L,n [MF = substrate, n = # of MID] 1. <MID₁> . . n. <MID_n> 4. L,3 1. <PRRECIPEMETHOD₁> 2. <RCPSPEC₁> 3. L,m [m = # recipe parameters] 1. L,2 1. <RCPPARNM₁> 2. <RCPPARVAL₁> . . m. L,2 1. <RCPPARNM_m> 2. <RCPPARVAL_m> 5. <PRPROCESSSTART₁> 6. <PRPAUSEEVENT₁> . . p. L,6 1. <PRJOBID_p> 2. <MF_p> 3a. L,n [MF = carrier, n = # of carriers] 1. L,2 1. <CARRIERID₁> 2. L,j [j = # of slots, may be implemented as an array] 1. <SLOTID₁> 2. <SLOTID₂> . . j. <SLOTID_j> . . . </pre>	


```

.
.
j. <SLOTIDj>
.
.
n. L,2
  1. <CARRIERIDn>
  2. L,j    [j = # of slots, may be implemented as an array]
    1. <SLOTID1>
    2. <SLOTID2>
    .
    .
    j. <SLOTIDj>
3b. L,n    [MF = substrate, n = # of MID]
  1. <MID1>
  .
  .
  n. <MIDn>
4.  L,3
  1. <PRRECIPEMETHODp>
  2. <RCPSPECp>
  3. L,m    [m = # recipe parameters]
    1. L,2
      1. <RCPPARNM1>
      2. <RCPPARVAL1>
    .
    .
    m. L,2
      1. <RCPPARNMm>
      2. <RCPPARVALm>
5.  <PRPROCESSSTARTp>
6.  <PRPAUSEEVENTp>

```

Exception

The list for specifying material (item 3a and 3b) is empty (L,0 instead of L,n), when no material is specified for the process job.
The form of data item 3(a or b) depends on the value in MF.

Stream,Function Name (Mnemonic)	Direction
S16,F16 PRJobMultiCreate Acknowledge	S,H<-E
<i>Description</i>	
This message acknowledges the request and reports any errors in the creation of a process job. ERRTEXT contains the identifier of process jobs that were not created.	
<i>Structure</i>	
L, 2 1. L, m [m = # jobs created] 1. <PRJOBID ₁ > . . m. <PRJOBID _m > 2. L, 2 1. <ACKA> 2. L, n 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . n. L, 2 1. <ERRCODE _n > 2. <ERRTEXT _n >	
<i>Exception</i>	
If n = 0, no errors exist.	

Stream,Function Name (Mnemonic)	Direction
S16,F17 PRJobDequeue	S,H->E,reply
<i>Description</i>	
Used to remove process jobs from the equipment for jobs that have not begun processing.	
<i>Structure</i>	
L, m [m = # jobs to remove] 1. <PRJOBID ₁ > . . m. <PRJOBID _m >	
<i>Exception</i>	
If m = 0, then de-queue all.	

Stream,Function Name (Mnemonic)	Direction
S16,F18 PRJobDequeue Acknowledge	S,H<-E
<i>Description</i>	
Acknowledge the request to de-queue and report any errors. ERRTEXT will contain the identifier of any jobs that were not de-queued.	
<i>Structure</i>	
L, 2 1. L, m [m = # jobs removed] 1. <PRJOBID ₁ > . . m. <PRJOBID _m > 2. L, 2 1. <ACKA> 2. L, n 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . n. L, 2 1. <ERRCODE _n > 2. <ERRTEXT _n >	
<i>Exception</i>	
If n = 0, no errors exist.	

Stream,Function Name (Mnemonic)	Direction
S16,F19 PRGetAllJobs	S,H->E
<i>Description</i>	
Requests the equipment to return a list of process jobs which have not completed. They may be running or waiting to run.	
<i>Structure</i>	
Header only	
<i>Exception</i>	
None	

Stream,Function Name (Mnemonic)	Direction
S16,F20 PRGetAllJobs Send	S,H<-E
<i>Description</i>	
Returns the requested list of process jobs.	
<i>Structure</i>	
L, m [m = # jobs in the list] 1. L, 2 1. <PRJOBID ₁ > 2. <PRSTATE ₁ > . . m. L, 2 1. <PRJOBID _m > 2. <PRSTATE _m >	
<i>Exception</i>	
If m = 0, then no process jobs are running or waiting to run.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F21 PRGetSpace	S,H->E
<i>Description</i>	
Requests the equipment to return the number of process jobs it has space to create.	
<i>Structure</i>	
Header only	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F22 PRGetSpace Send	S,H<-E
<i>Description</i>	
Sends the host the number of process jobs which can be created.	
<i>Structure</i>	
<PRJOBSPACE>	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F23 PRJobSetRecipeVariable	S,H->E
<i>Description</i>	
Reset the value of recipe variable parameters for a specific process job.	
<i>Structure</i>	
L, 2 1. <PRJOBID> 2. L, m [m = # recipe variables] 1. L, 2 1. <RCPPARM ₁ > 2. <RCPPARVAL ₁ > . . m. L, 2 1. <RCPPARM _m > 2. <RCPPARVAL _m >	
<i>Exception</i>	
None	



<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F24 PRJobSetRecipeVariable Acknowledge	S,H<-E
<i>Description</i>	
Indicate the status of the request to set recipe variables. ERRTEXT will contain the RCPPARNM value for parameters that could not be reset.	
<i>Structure</i>	
L, 2 1. <ACKA> 2. L, n 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . n. L, 2 1. <ERRCODE _n > 2. <ERRTEXT _n >	
<i>Exception</i>	
If n = 0, no errors exist.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F25 PRJobSetStartMethod	S,H->E
<i>Description</i>	
Used to request to change the start method (USERSTART or AUTO) for one or more process jobs.	
<i>Structure</i>	
L, 2 1. L, m [m = # of jobs] 1. <PRJOBID ₁ > . . m. <PRJOBID _m > 2. <PRPROCESSSTART>	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F26 PRJobSetStartMethod Acknowledge	S,H<-E
<i>Description</i>	
Acknowledges request to set job start method and indicates any errors. ERRTEXT will contain the identifiers of any process jobs that did not accept the new process start method.	
<i>Structure</i>	
L, 2 1. L, m [m = # of jobs] 1. <PRJOBID ₁ > . . m. <PRJOBID _m > L, 2 1. <ACKA> 2. L, n 1. L, 2 1. <ERRCODE ₁ > 2. <ERRTEXT ₁ > . . n. L, 2 1. <ERRCODE _n > 2. <ERRTEXT _n >	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F27 Control Job Command Request	S,H->E
<i>Description</i>	
Send a control job command to a control job.	
<i>Structure</i>	
L, 3 1. <CTLJOBID> 2. <CTLJOBCMD> 3. L, 2 1. <CPNAME> 2. <CPVAL>	
<i>Exception</i>	
3. L,2 IS L,0 for commands that do not need parameters.	



<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F28 Control Job Command Acknowledge	S,H<-E
<i>Description</i>	
Indicates success or failure of command request to a control job. If applicable ERRTEXT shall contain information on specific command parameter names or values that caused the error.	
<i>Structure</i>	
L, 2 1. <ACKA> 2. L, 2 1. <ERRCODE> 2. <ERRTEXT>	
<i>Exception</i>	
2. L,2 IS L,0 if no errors.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F29 PRSetMtrlOrder (PRJSMO)	S,H->E,reply
<i>Description</i>	
This message requests the equipment's Processing Management Service to use a specific strategy for the order in which materials are processed.	
<i>Structure</i>	
<PRMTRLORDER>	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S16,F30 PRSetMtrlOrder Acknowledge (PRJSMOA)	S,H<-E
<i>Description</i>	
This message acknowledges the request for change to the material process strategy by reporting back the value requested, if correct.	
<i>Structure</i>	
<ACKA>	
<i>Exception</i>	
None	

10.21 *Stream 17 Equipment Control and Diagnostics* — This stream is a continuation of Stream 2.

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S17,F0 Abort Transaction (S17F0)	S,H<->E
<i>Description</i>	
Same form as S1F0	
<i>Structure</i>	
<i>Exception</i>	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S17,F1 Data Report Create Request (DRC)	M,H->E,reply
<i>Description</i>	
Create a Data Report definition. This function allows the referencing of a Data Source for the items (variables or attributes) specified in the data report.	
<i>Structure</i>	
L, 4 1. <DATAID> 2. <RPTID> 3. <DATASRC> 4. L, n 1. <VID ₁ > 2. <VID ₂ > . . . n. <VID _n >	
<i>Exception</i>	
DATAID is a zero length item when the request can be sent in a single block. If RPTID is a zero length item, then the equipment shall return a value in RPTID by which the host can then reference the report definition. If RPTID has a value, then the equipment shall retain this value by which the host can then reference the report definition.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S17,F2 Data Report Create Acknowledge (DRCA)	S,H<-E
<i>Description</i>	
Equipment confirms creation of a Data Report and returns RPTID.	
<i>Structure</i>	
L, 2 1. <RPTID> 2. <ERRCODE>	
<i>Exception</i>	
If ERRCODE is a zero length item, then no error occurred.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S17,F3 Data Report Delete Request (DRD)	S,H->E,reply
<i>Description</i>	
Delete one or more data reports. This shall cause those reports to be unlinked from any Event Reports to which they were linked. This shall cause the report to be excluded from any Trace Reports for in which it had originally been included.	
<i>Structure</i>	
L, n 1. <RPTID ₁ > 2. <RPTID ₂ > . . . n. <RPTID _n >	
<i>Exception</i>	
If this message is sent with a zero length list, then all reports shall be deleted.	

Stream,Function Name (Mnemonic)	Direction
S17,F4 Data Report Delete Acknowledge (DRDA)	S,H<-E
<i>Description</i>	
Equipment confirms or indicates any errors on the request to delete Data Reports. All Data Reports which could be deleted shall be listed in the response and the associated error code shall be included in the list.	
<i>Structure</i>	
L, 2 1. <ACKA> 2. L, m 1. L, 3 1. <RPTID ₁ > 2. <ERRCODE ₁ > 3. <ERRTEXT ₁ > . . m. L, 3 1. <RPTID _m > 2. <ERRCODE _m > 3. <ERRTEXT _m >	
<i>Exception</i>	
If ACKA is TRUE, then no errors were encountered, meaning all report requests were completed successfully and a zero-length list (m = 0) shall be sent.	
If some reports could not be deleted, then their RPTIDs shall be given in a space separated list in ERRTEXT.	

Stream,Function Name (Mnemonic)	Direction
S17,F5 Trace Create Request (TRC)	M,H->E,reply
<i>Description</i>	
Establish a Trace Report definition.	
<i>Structure</i>	
L, 6 1. <DATAID> 2. <TRID> 3. <CEED> 4. L, n 1. <RPTID ₁ > 2. <RPTID ₂ > . . n. <RPTID _n > 5. <TRSPER> 6. L, m (m = {0,8}) 1. <TOTSMP> 2. <REPGSZ> 3. <EVNTSRC> (Defines source for start Event) 4. <CEID> (Defines ID of the start Event) 5. <EVNTSRC> (Defines source for stop Event) 6. <CEID> (Defines ID of the stop Event) 7. <TRAUTOD> 8. <RPTOC>	
<i>Exception</i>	
The list m can be zero-length, or it can contain all eight data items. Since specifying values for each item is optional, each of the eight items can be zero-length. If the item is zero-length, the format of the item shall be the same format used in other instances of the S17,F5 message where the value is not zero-length.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S17,F6 Trace Create Acknowledge (TRCA)	S,H<-E
<i>Description</i>	
Equipment confirms creation of an Event Report and returns a TRID.	
<i>Structure</i>	
L, 2 1. <TRID> 2. <ERRCODE>	
<i>Exception</i>	
If ERRCODE is a zero length item, then no error occurred.	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S17,F7 Trace Delete Request (TRD)	S,H->E,reply
<i>Description</i>	
The host requests to delete one or more Trace Reports.	
<i>Structure</i>	
L, n 1. <TRID ₁ > 2. <TRID ₂ > . . n. <TRID _n >	
<i>Exception</i>	
None	

<i>Stream,Function Name (Mnemonic)</i>	<i>Direction</i>
S17,F8 Trace Delete Acknowledge (TRDA)	S,H<-E
<i>Description</i>	
This message is required to inform the host when a Trace Report could not be deleted. This message does not need to be sent to confirm the successful deletion of a Trace Report. If the report is sent for a successfully deleted Trace Report, then the ERRCODE item length shall be set to zero.	
<i>Structure</i>	
L, 2 1. <ACKA> 2. L, m 1. L, 3 1. <TRID ₁ > 2. <ERRCODE ₁ > 3. <ERRTEXT ₁ > . . m. L, 3 1. <TRID _m > 2. <ERRCODE _m > 3. <ERRTEXT _m >	
<i>Exception</i>	
If ACKA is TRUE, then no errors were encountered, meaning all report requests were completed successfully and a zero-length list (m = 0) shall be sent.	
If some reports could not be deleted, then their TRIDs shall be provided in a space separated list in ERRTEXT.	