

*Product Manager
Joint - Automatic Identification Technology*



**Active RFID Tag Format
and Data Specifications**

**Joint Defense Total Asset Visibility (JDTAV)
Version 2.0 (INCITS)**

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Revision History

Release	Issue Date	By	Paragraph and Text Revised
v2.0	10 MAY 2002	PM J-AIT	Legacy format.
v2.0 (INCITS)	11 April 2008	USTC J5/4-I Logistics AIT Office (E. Lung)	<p>Most of the document changed. The data format did not change. Data table formats and text descriptions were rewritten for clarity.</p> <p>The Free Text tag format was removed. It was never used in the DOD environment.</p> <p>References and formats for the Savi SealTag and Savi 412 tag were removed.</p> <p>The term “TAV Summary” data is used in lieu of “License Plate” data to preclude confusion with a new “License Plate” tag type being introduced for RF tag migration to the ISO/IEC 18000-7 protocol.</p> <p>Some of the format table values for the JD TAV v2.0 (INCITS) format were changed to correct memory location annotation errors. See Table 3, Table 4, Table 12, and Table 17.</p> <p style="padding-left: 40px;">Memory address locations were matched between the tables.</p> <p style="padding-left: 40px;">The example Database records were shortened to match the 104 position record length.</p> <p>Data entry requirements were added for: (M) Mission Essential, (C) Conditional, (O) Optional, and (S) System.</p> <p>The Commodity Item Database was retitled to Database. The database contains more than just commodity information in the Single Data Item records. A preferred business process was added for Database record truncation.</p> <p>Many sample data values were changed to integrate table information with the examples.</p> <p>When tag’s input file data is truncated to fit RFID tag memory limitations, the specification now requires that the complete file (as it existed before truncation) be sent to the RF-ITV System server for the respective RFID tag.</p> <p>The instructions for erasing and formatting a tag were clarified.</p>

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Active RF Tag Format and Data Specifications

JDTAV v2.0 (INCITS)

I. OVERVIEW

This document provides a detailed description of the RF-Tag data format for the 128K Savi 400/600 series tags configured to use the Joint Defense Total Asset Visibility (JDTAV) data formats and the International Committee for Information Technology Standards (INCITS) 256 RFID air interface protocol.

II. RFID TAG MEMORY OVERVIEW

A. **Standard Memory** (Size varies by tag model). Standard Memory consists of non-volatile memory that holds configuration information for the tag; see Table 1. This information is typically updated by system software development kit (SDK) function calls, or fixed device framework (FDF) function calls used to write files to the tag.

Table 1. Standard Memory Data Values

Address (decimal)	Length	Element Descriptor	Data Value
00 - 14	15	Tag ID and Savi Reserved	Fixed - Savi defined
15 - 17	3	File Type	hexadecimal values: address 15 = 0xE0 address 16 = 0x01 address 17 = 0x02
18	1	Reserved	
19 - 34	16	Tag Name	User defined – up to 16 ASCII characters
35 - 39	5	Date Tag was Last Written	Encoded date
40 - 42 (MSB - LSB)*	3	Pointer to Extended Memory End of File	End of file pointer
43 - 56	16	Reserved	
57 - 58	50	Sensor Data	Savi value
59 - 108	50	Gate Data	As defined by the functional application

* MSB = most significant bit LSB = least significant bit

1. The File Type identifies this file as the DOD RFID tag database format described in this document. The File Type identifier must be entered as three hexadecimal values of 0xE0, 0x01, and 0x02.
2. The Tag Name is up to 16 characters and is NULL terminated. For example, if the name is USAA0012345, then there is a NULL or binary zero after the '5'. This will indicate that the name is only 11 characters long in this example. If the name takes up the full 16-character field, then no NULL terminator is needed. If there is no name defined for the tag, then a single NULL should be written to the first character in the field.
3. The Date Tag was Last Written should be updated when an external source writes new data into a tag.

(a) That source must write the correct date and the Greenwich Mean Time (GMT) to this field. Five bytes starting at locations 35 to 39 hold the Year (00-99), Month (01-12), Day (01-31), Hour (00-23), and Minute (00-59) in binary-coded decimal (BCD) format. Note that the tag does not verify if a valid date or time was written.

(b) Table 2 shows an example of a tag written on February 10th, 2006 at 14:28.

Table 2. Date Tag Was Last Written Data Example

Address	35	36	37	38	39
Value (decimal)	06	02	10	14	28
Encode hex value as:	0x06	0x02	0x10	0x0E	0x1C

A. **Extended Memory** (128K Bytes). User data is stored in the Extended Memory of the RFID tag.

1. There are four sections of data that make up an RFID tag file (see Table 3):

(a) Total Asset Visibility (TAV) Summary Data

- Sustainment format
- Unit Movement format

(b) Database Structure Information

- Database Table Pre-header
- Database Table Header

(c) Database Records (1150 Records Maximum)

- Commodity Item record
 - Nomenclature
 - Document Number
 - Line Item Number
 - National Stock Number
 - Routing Identifier Code
 - Unit of Issue
 - Quantity
 - Condition Code
 - Shipment TCN
 - User Remarks
- Single Data Item record
 - Data Header
 - User Data

(d) TCMD Data (79 Records Maximum)

- T_0 / 1 / 4 single shipment unit prime records
- T_2 / 3 consolidated shipment unit prime header records
- T_5 / 6 / 7 / 9 trailer records
- Any DTR 4500.9-R manifest (80 card-column format)

2. The locations of the sections in Extended Memory are shown below in Table 3. User data appears in the gray sections; configuration data for the tag appears in the white sections.

Table 3. RFID Tag Extended Memory - RFID Tag File Format

Address	Section
0000	<i>Reserved</i>
0001 0254	TAV Summary Data
0255	<i>Reserved</i>
0256 0399	Database Table Pre-Header
0400 0511	<i>Reserved</i>
0512 0527	Database Table Header
0528 120127	Commodity Item Records and Single Data Item Records
120128	<i>Unused</i>
120129 124730	4602 Reserved Bytes for Database Query Results
124731 131050	TCMD Records
131051 131071	<i>Unused</i>

NOTE: Technically, any combination (all, some, or none) of the TAV Summary data, Commodity Item records, Single Data Item records, or TCMD records may be used. However, this data specification identifies a data element status for these data records as either mission essential (M = some value must be entered to include zero fill, “none”, or “N/A”), conditional (C = must be provided if available), optional (O = user determines applicability), or system (S = system generated with no user input). The functional data specification requirement of mission essential, conditional, or optional data entry is separate and distinct from a tag format requirement to encode a null, space, character, digit, carriage return, or line feed value at a specified memory position.

III. TAV SUMMARY DATA

A. TAV Summary data stored in the tag provides a quick and easy means of accessing important summary information from the tag. To facilitate the display of data with a hand held interrogator (HHI), each line of information in the TAV Summary data section should be no more than 20 characters in length or should be structured to display correctly on an HHI (i.e., carriage returns and line feeds, or line wrapping are used as required to cause a structured HHI display).

B. The TAV Summary information types defined for JDTAV v2.0 (INCITS) are Sustainment and Unit Movement. These are signified by the following ASCII characters stored in the first location (tag address 0001) of the TAV Summary data section: 'S' for Sustainment, and 'U' for Unit Movement.

NOTE: Items in the TAV Summary data section cannot be queried from tag memory by data value because they are not part of the database information stored in the tag. To query on tag memory database information, see the query discussions in the Database section below; see Paragraph IX.

C. The defined types of TAV Summary data are detailed below. All tag TAV Summary memory positions must be filled with data values, to include the free text entries. For example, for a fixed length field of 4 positions, if the data value entry is 24, valid entries are '0024', '24 ' (2 trailing spaces), or ' 24' (2 leading spaces). Also, valid representations for (zero) are '0000', '0 ' (3 trailing spaces), or ' 0' (3 leading spaces). An empty field (no data) must be filled with spaces.

IV. TAV SUMMARY DATA – SUSTAINMENT

A. The Sustainment TAV Summary format has the following form when viewed on a handheld interrogator (HHI). Most of the user encoded data, except for the Container/Pallet ID numbers, Pieces, Weight, and Cube, can often be derived from the shipment TCMD transactions. Specific data descriptions are provided below.

```
S ITM 013 TCMD 006
CONTAINER 50054
LEAD TCN
SW31244112V002MM2
POE-1G9 POD-PL3
CONSIGNEE HK926A
TP3 HAZMAT X
FROM SW3124
CARRIER SEAU
SHIPPED 112
PIECES 0001
WGT 10100 CUBE 1360
Text Comment - (60 characters)
02.00
```

B. The Sustainment TAV Summary format is shown in Table 4.

Table 4. Sustainment TAV Summary Data Format

Tag Address	Element Descriptor	Element Status	Fixed Length	Sample Data
1	Sustainment Indicator	S	1	S
6	Item Record Count	S	4	013
15	TCMD Record Count	S	4	006
31	Container Code	C	5	50054
48	Lead TCN	M	17	SW31244112V002MM2
71	POE	C	3	1G9
79	POD	C	3	PL3
94	Consignee DODAAC	C	6	HK926A
104	Transportation Priority	C	1	3
113	Cargo Type (HAZMAT) Code	M	1	X
121	Consignor DODAAC	C	6	SW3124
137	Carrier Code	O	4	SEAU
151	Ship Date (Julian)	C	3	112
163	Shipment Piece Count	M	4	0001
173	Weight (Gross)	M	5	10100
184	Cube (Gross)	M	4	1360
190	ASCII Free Text	O	60	Free Text Comments (60 characters)
250	Format Version No.	S	5	02.00

Element Status column identifies: M = mission essential data and spaces;
 C = conditional data (must be provided if available) and/or spaces; O = optional data and/or spaces; S = system data (no user input).

- Sustainment Indicator element is **S**.
- Item Record Count or **ITM** is the total number of Commodity Item records and Single Data Item records stored in the tag (see Database below in Paragraph IX).
- TCMD Record Count or **TCMD** is the number of TCMD records stored in the tag (see TCMD data below in Paragraph XII).
- Container Code or **CONTAINER** is an abbreviated number that is derived from the last five (5) alphanumeric characters of the serial number or identification number marked on the container (disregard special symbols and dashes), or it is derived from the last five characters of the pallet ID on a 463-L System pallet placard. The RFID tag TAV Summary abbreviated Container Code serves as a cross-reference link to ensure the correct tag has been attached to the respective conveyance container. This TAV Summary abbreviated Container Code usually has no significance for ITV tracking.

NOTE: The term “conveyance container” includes all shipping containers (crates, boxes, cartons, etc.), vans, and pallets.

- For commercial SEAVANs, the TAV Summary abbreviated Container Code is from the last five (right-most) numbers of the ISO/IEC 6346 defined container identification number marked on an ISO/IEC compliant container. It will include the Check Digit which is the last number of the 11 character identification number marked on an

ISO/IEC container. The check digit is usually set off from the preceding 6-digit Serial Number by a dash (-), space, slash (/), or other discriminating mark.

- The TAV Summary abbreviated Container Code may be the same number encoded in a SEAVAN TCMD T_2 record (rp 4-8) which is a constructed Container Number Code (same title, but may be a different value). The TCMD Container Number Code is a cross-reference data element used only for linking TCMD sets together. The TCMD Container Number Code is described in the DTR, Part II, Appendix QQ as being the last five digits of the serial number permanently assigned to a SEAVAN; however, this policy is seldom followed. The TCMD Container Number Code is usually derived from the ISO/IEC container identification number marked on the van, which is not a permanent mark – the ISO/IEC container identification number is the owner's identification number and not the manufacturer's permanent serial number printed on the van's data plate.

NOTE: For commercial SEAVANs, the full length, 11-character ISO/IEC container identification number must also be encoded in a Single Data Item record as the Container Number; see Paragraph XI. For 463-L System pallets, the full length, five or six-character pallet identification number must be encoded in a Single Data Item record as the Container Number.

- Lead TCN is the conveyance container's shipment unit Transportation Control Number or a manifest Transportation Control Number for cargo loaded on carrier equipment – a TCN may be used either for shipment units or for manifests. If a manifest does not use a TCN constructed IAW DTR Part II, Appendix L, a unique TCN for the RFID tag Lead TCN field may be constructed in the following manner:
 - Enter the unique manifest control number (an..17) and right fill the TCN field with 'X' characters as necessary.
 - Enter the applicable 463L System pallet ID number (an6) followed by a Julian date (n4) or calendar date (an8) and right fill the TCN field with 'X' characters.

NOTE: the annotation (an) = fixed length alphanumeric, (an..) = variable length alphanumeric, and (n) = fixed length numeric.

- POE is the Port/Point of Embarkation Code for the conveyance container. Use the DTR specified code tables for POE values. To encode manifest Origin location information, a user defined Single Data Item record is recommended. Inland Location Codes must not be used for shipments transiting air or sea ports of embarkation.
- POD is the Port/Point of Debarkation Code for the conveyance container. Use the DTR specified code tables for POD values. To encode manifest Destination location information, a user defined Single Data Item record is recommended. Inland Location Codes must not be used for shipments transiting air or sea ports of debarkation.
- Consignee DODAAC or **CONSIGNEE** is the DOD Activity Address Code for the conveyance container Consignee (the shipment's final receipt entity). Use the DTR specified code table.
- Transportation Priority or **TP** is a priority code of 1, 2, 3, or 4, as defined in the DTR, for the conveyance container.
- Cargo Type (HAZMAT) Code or **HAZMAT** flags hazardous or non-hazardous conditions of the shipment. The code may be extracted from the second position of the TCMD Document Identifier Code (see DTR Part II Appendix DD). Examples of the most used codes are:
 - E** = ammunition/explosives.
 - J** = hazardous materials (except ammunition/explosives and ORM-D hazards).
 - V** = Government vehicles, trailers, wheeled guns, and aircraft.
 - X** = shipments (including those with ORM-D hazards) not covered above.

- Consignor DODAAC or **FROM** is the DOD Activity Address Code (DODAAC) for the shipper. Use the DTR specified code table.
- Carrier Code or **CARRIER** is the code assigned to identify the carrier of the conveyance container. The code may be a Standard Carrier Alpha Code or a free-form text abbreviation for the carrier type (e.g., ARMY, USAF, USMC, SHIP, TRCK, TRLR, and HMVE).
- Ship Date (Julian) or **SHIPPED** is the Julian date the shipment departed the shipment unit Consignor location or the date the manifested load departed an Origin location.
- Shipment Piece Count or **PIECES** is either the separate segments (pieces) of the shipment unit that have not been unitized (i.e., the packages have been marked “Piece n of X Pieces”) or it is the total number of pieces listed on a load manifest or bill of lading. The DTR term “shipment unit” defines the configuration and handling characteristic elements of a shipment marked with a military shipping label (MSL). A “manifest” or a “bill of lading” is a document describing a load of shipment units.
 - For shipment units, the Shipment Piece Count is the number of separate segments (pieces) marked with MSLs for the same shipment. The Shipment Piece Count should be the number X in the MSL annotation for (Piece n of X Pieces).
 - For shipment units documented with a TCMD, except for SEAVANs, the Shipment Piece Count may be derived from the TCMD T_0/1/2/3 header record, rp 68-71. For shipment units, other than SEAVANs, this will be the separate segments (pieces) of the shipment unit that have not been unitized.
 - For a SEAVAN shipment unit, the Shipment Piece Count will always be 0001. The piece count cannot be extracted from TCMD T_2 record for a SEAVAN (Type Pack Code in rp 28 = Z); the TCMD pieces value in rp 68-71 is a van contents piece count and not a shipment unit handling characteristic element.
 - For a 463L System pallet shipment unit (the pallet load has an MSL and TCN – usually built by a DLA CCP), the Shipment Piece Count will always be 0001.
 - For a manifested load, such as a manifested load on a truck or a manifested load on an aerial port built-up 463L System pallet (neither the truck load nor pallet load are marked with an MSL), the Shipment Piece Count is the total number of pieces annotated on the manifest.
- Weight (Gross) or **WGT** is the gross weight of the conveyance container (includes contents) or the total weight of the manifested items. This value cannot be extracted from the TCMD T_2 record for a SEAVAN (Type Pack Code in rp 28 = Z), which only documents the weight of the SEAVAN’s contents – use the weight annotated on the MSL.
- Cube (Gross) or **CUBE** is the total exterior cube of the conveyance container or the total cube of the manifested items. This value cannot be extracted from the TCMD T_2 record for a SEAVAN (Type Pack Code in rp 28 = Z), which only documents the cube of the SEAVAN’s contents – use the Cube annotated on the MSL.
- ASCII Free Text is 60 characters.
- Format Version No. is **02.00**.

C. Ammunition TAV Summary (Sustainment) Data. The above specifications are changed as follows:

- Container Code: Populate break-bulk shipments with the abbreviated truck/trailer/railcar number or 463-L System pallet abbreviated identification number as applicable.
- Carrier Code: The ocean carrier’s Standard Carrier Alpha Code (SCAC) will be utilized for containerized shipments (see Appendix SS). The respective carrier’s SCAC will be used for break-bulk shipments.

D. Prepositioned Equipment TAV Summary (Sustainment) Data. The above specifications are changed as follows:

- Consignor/Consignee DODAAC: Fill both fields with the Consignor DODAAC.
- POE/POD: Fill both fields with the POE Code.

E. Table 5 shows a template for the Sustainment TAV Summary data to show exact memory locations in the tag. Shaded characters are non-changing ASCII characters used for clarification of fields. Each line, except the last two, ends with a carriage return (CR) and line feed (LF).

Table 5. Sustainment TAV Summary Data Example

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	
S		I	T	M		0	1	3		T	C	M	D		0	0	6	CR	LF	
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37				
C	O	N	T	A	I	N	E	R		5	0	0	5	4	CR	LF				
38	39	40	41	42	43	44	45	46	47											
L	E	A	D		T	C	N	CR	LF											
48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66		
S	W	3	1	2	4	4	1	1	2	V	0	0	2	M	M	2	CR	LF		
67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83				
P	O	E	-	1	G	9		P	O	D	-	P	L	3	CR	LF				
84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101			
C	O	N	S	I	G	N	E	E		H	K	9	2	6	A	CR	LF			
102	103	104	105	106	107	108	109	110	111	112	113	114	115							
T	P	3		H	A	Z	M	A	T		X	CR	LF							
116	117	118	119	120	121	122	123	124	125	126	127	128								
F	R	O	M		S	W	3	1	2	4	CR	LF								
129	130	131	132	133	134	135	136	137	138	139	140	141	142							
C	A	R	R	I	E	R		S	E	A	U	CR	LF							
143	144	145	146	147	148	149	150	151	152	153	154	155								
S	H	I	P	P	E	D		1	1	2	CR	LF								
156	157	158	159	160	161	162	163	164	165	166	167	168								
P	I	E	C	E	S		0	0	0	1	CR	LF								
169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189
W	G	T		1	0	1	0	0		C	U	B	E		1	3	6	0	CR	LF
190 to 249																				
Text Comment (60 characters and/or spaces)																				
250	251	252	253	254																
0	2	.	0	0																

NOTE: Blank cells represent ASCII 'space' characters.

V. TAV SUMMARY DATA – UNIT MOVEMENT

A. The Unit Movement TAV Summary data has the following form. Bold letters indicate fixed data. The Unit Movement TAV Summary format is shown in Table 6.

```

U ITM 001 TCMD 006
ULN A2345
UIC B23456
B-C23456 S-D23456
AB23456$00A0010XX
UN EQ
HHC, 1ST SIGNAL BN
HELICPR CARGO MH-60K
M 34-KKZXXXX
S BELL0394-0
LIN H30766 1P2-JF1
H W23QLL
CM 9001Z HZ J
Text Comment - (33 characters)
02.00
    
```

Table 6. Unit Movement TAV Summary Data Format

Tag Address	Element Descriptor	Element Status	Fixed Length	Sample Data
1	Unit Movement Indicator	S	1	U
6	Item Record Count	S	4	001
15	TCMD Record Count	S	4	006
25	Unit Line Number	M	7	A2345
38	Unit Identification Code	M	6	B23456
48	Bumper Number	C	6	C23456
57	Shipment Unit Number (SUN - Army only)	C	6	D23456
65	Transportation Control Number	M	17	AB23456\$00A0010XX
91	Unit Name	O	20	HHC, 1ST SIGNAL BN
113	Equipment Description	M	20	HELICPR CARGO MH-60K
137	Model Number	C	10	34-KKZXXXX
151	Serial Number / Package ID	C	10	BELL0394-0
167	Line Item Number	C	6	H30766
174	POE	C	3	1P2
178	POD	C	3	JF1
185	Home Station	O	15	W23QLL
205	Commodity and S/H Codes	C	5	9001Z
214	Cargo Type (HAZMAT) Code	M	1	J
217	ASCII Free Text	O	33	Free Text Comment (33 characters)
250	Format Version No.	S	5	02.00

Element Status column identifies: M = mission essential data and spaces; C = conditional data (must be provided if available) and/or spaces; O = optional data and/or spaces; S = system data (no user input).

- Unit Movement Indicator element is **U**.
- Item Record Count or **ITM** is the total number of Commodity Item records and Single Data Item records stored in the tag (see Database below in Paragraph IX). See data format in Paragraph III.C.
- TCMD Record Count or **TCMD** is the number of shipment unit records in the shipment. See data format in Paragraph III.C.
- Unit Line Number or **ULN** is a Joint Operation and Planning Execution System (JOPES) two to seven-character alphanumeric code that describes a unique increment of a unit deployment in an operations plan.
- Unit Identification Code or **UIC** is a JOPES six-character alphanumeric code that uniquely identifies each Active, Reserve, or National Guard unit of the Armed Forces.
- Bumper Number or **B** is the Bumper / Vehicle Number marked on a specific piece of equipment.
- Shipment Unit Number or **S** is Army unique and is often referred to as the “SUN” number. The SUN usually identifies a specific piece of equipment in a deployment list, may indicate a parent to child relationship, and is also used as part of the TCN (rp 10-14).
- Transportation Control Number (no header title) is the shipment unit Transportation Control Number for the conveyance container or for the unit equipment marked with an MSL.
- Unit Name or **UN** is the name of the unit shipping the equipment.
- Equipment Description or **EQ** is a free text description of the equipment.
- Model Number or **M** is the equipment Model Number.
- Serial Number / Package ID or **S** is the equipment Serial Number or assigned permanent ID number.
- Line Item Number or **LIN** is the Line Item Number of the equipment – usually a number used to authorize and account for assigned property.
- POE and POD (no header titles) are the Port/Point of Embarkation and Port/Point of Debarkation Codes. Use the DTR specified code tables for POE/POD values. Inland Location Codes must not be used for shipments transiting air or sea ports of embarkation/debarkation.
- Home Station or **H** is the free text name or DODAAC for the unit’s home station.
- Commodity and S/H Codes or **CM** are the Commodity Code and Special Handling Codes assigned to the conveyance container or equipment. For surface movements, the five-digit code is the Water Commodity Code + the Water Type Cargo Code + the Water Special Handling Code (DTR Part II, Appendices KK, NN, and LL). For air movements, the two-digit code is the Air Commodity Code + the Air Special Handling Code (DTR, Part II, Appendix Z).
- Cargo Type (HAZMAT) Code or **HZ** flags hazardous or non-hazardous conditions of the shipment. The code may be extracted from the second position of the TCMD Document Identifier Code (see DTR Part II Appendix DD). Examples of the most used codes are:
 - E** = ammunition/explosives.
 - J** = hazardous materials (except ammunition/explosives and ORM-D hazards).
 - V** = Government vehicles, trailers, wheeled guns, and aircraft.
 - X** = shipments (including those with ORM-D hazards) not covered above.
- ASCII Free Text is 33 characters.
- Format Version No. is **02.00**.

B. Table 7 is a template for the Unit Movement TAV Summary data to show exact memory locations in the tag. Shaded characters are non-changing ASCII characters, used for clarification of fields. Each line, except the last two, end with a carriage return (CR) and line feed (LF).

Table 7. Unit Movement TAV Summary Data Example

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
U		I	T	M		0	0	1		T	C	M	D		0	0	6	CR	LF		
21	22	23	24	25	26	27	28	29	30	31	32	3									
U	L	N		A	2	3	4	5			CR	LF									
34	35	36	37	38	39	40	41	42	43	44	5										
U	I	C		B	2	3	4	5	6	CR	LF										
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64			
B	-	C	2	3	4	5	6		S	-	D	2	3	4	5	6	CR	LF			
65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83			
A	B	2	3	4	5	6	\$	0	0	A	0	0	1	0	X	X	CR	LF			
84	85	86	87	88	89	90															
U	N		E	Q	CR	LF															
91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
H	H	C	,		1	S	T		S	I	G	N	A	L		B	N			CR	LF
113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134
H	E	L	I	C	P	R		C	A	R	G	O		M	H	-	6	0	K	CR	LF
135	136	137	138	139	140	141	142	143	144	145	146	147	148								
M		3	4	-	K	K	Z	X	X	X	X	CR	LF								
149	150	151	152	153	154	155	156	157	158	159	160	161	162								
S		B	E	L	L	0	3	9	4	-	0	CR	LF								
163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182		
L	I	N		H	3	0	7	6	6		1	P	2	-	J	F	1	CR	LF		
183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201			
H		W	2	3	Q	L	L										CR	LF			
202	203	204	205	206	207	208	209	210	211	212	213	214	215	216							
C	M		9	0	0	1	Z		H	Z		J	CR	LF							
217 to 249																					
Text Comment (33 characters and/or spaces)																					
250	251	252	253	254																	
0	2	.	0	0																	

NOTE: Blank cells represent ASCII 'space' characters.

VI. DATABASE STRUCTURE INFORMATION

- 272 bytes total
- Starts at Extended Memory address 256
- Consists of Database Table Pre-Header and Database Table Header

A. The Database Table Pre-Header contains all of the field names and field types to define the record formats for data in the database. This information is used by the HHI and other applications to display the field names of each column.

B. The Database Table Header contains the data for the number of fields, the size of each field, and the starting location of each field. The tag database engine uses this information when searching the database.

VII. DATABASE TABLE PRE-HEADER FORMAT

A. The following pre-header data in Table 8 is fixed for INCITS 256 tags. It must be written to INCITS 256 tags and should not be modified. TAV is the database table name.

B. Field names in the memory address range 400 to 511 are reserved for future expansion.

Table 8. Database Table Pre-Header Format

Memory Address	Length	Decimal or ASCII Value	Description	
256	1	12	Offset from 256 to start of DB field name records	
257	1	12	Length of each DB field name record	
258	8	TAV	Table Name TAV	
266	1	00	Reserved	
267	1	00	Reserved	
See Table 11 for data values	268	1	A	Field Type 'A' = ASCII
	269	1	00	Reserved
	270	10	NOMENCLATR	Field Name NOMENCLATR
	280	1	A	Field Type 'A' = ASCII
	281	1	00	Reserved
	282	10	DOCUMENT	Field Name DOCUMENT
	283 - 387	See inclusive information in the following table		
	388	1	A	Field Type 'A' = ASCII
	389	1	00	Reserved
	390	10	MISC2	Field Name MISC2
400-511	112	00	Reserved	

C. Table 9 shows the exact values encoded in the pre-header address locations.

Table 9. Database Table Pre-Header Exact Values

Beginning Address	Value at each address											
256	12	12	T	A	V						00	00
268	A	00	N	O	M	E	N	C	L	A	T	R
280	A	00	D	O	C	U	M	E	N	T		
292	A	00	L	I	N							
304	A	00	N	S	N							
316	A	00	R	I	C							
328	A	00	U	N	I	T	_	I	S	S	U	E
340	A	00	Q	U	A	N	T	I	T	Y		
352	A	00	C	O	N	D	_	C	O	D	E	
364	A	00	I	N	T	_	T	C	N			
376	A	00	M	I	S	C	1					
388	A	00	M	I	S	C	2					
400-511	00											

(Shaded is decimal value; white is ASCII text/spaces)

D. The information in these data locations should not be changed; no application programs should modify these memory locations except when formatting a tag. This table needs to be written as it appears here when the tag is formatted.

VIII. DATABASE TABLE HEADER FORMAT

A. Table 10 shows the address locations for data identifying the total number of records allowed in the database, the number of fields in each record, and the offset address locations for the database records and fields as identified in the pre-header table at Paragraph VII.

Table 10. Database Table Header

Address	Length	Decimal Value	Description
512	2	1150	Total number of records allowed to be in the database (related to Extended Memory size) Sum of Commodity Item records and Single Data Item records
514	1	11	Number of fields in each record
515	1	16	Offset from 512 to start of database
516	1	00	Record offset to 1st field
517	1	10	Record offset to 2nd field
518	1	25	Record offset to 3rd field
519	1	31	Record offset to 4th field
520	1	46	Record offset to 5th field
521	1	49	Record offset to 6th field

Address	Length	Decimal Value	Description
522	1	51	Record offset to 7th field
523	1	56	Record offset to 8th field
524	1	57	Record offset to 9th field
525	1	74	Record offset to 10th field
526	1	88	Record offset to 11th field
527	1	104	Record size

B. See Paragraph X, Database Commodity Item Record, for more information on record offsets and field lengths.

IX. DATABASE RECORDS

- 104-character records
- 1150 records maximum (128K bytes memory tag)
- Starts at Extended Memory address 528

A. There are two types of data records stored in the database: Commodity Item records and Single Data Item records. Each type of record and its format is described in following paragraphs. In any particular database, any combination of these two records may be present. The combined total of database records may not exceed 1150 on the RFID tag.

Note: A Savi ST-614 tag can only store 13 database records in the JDTAV v2.0 (INCITS) format.

B. Each memory position in a database record must be encoded with alphanumeric data values, including spaces, when a record is created.

C. If any of the database records generated for an RFID tag cannot be written to the RFID tag's memory, the RFID tag write transaction sent to the respective RF-ITV System server must include all the dropped database records.

D. There is no specific method specified for truncating database records beyond the 1150 record limit.

1. Applications may truncate from the last record in the file to the 1150th record.
2. The preferred truncation method incorporates a business process where the Single Data Item records have priority over Commodity Item records (i.e., Commodity Item records will be dropped first). The truncation procedure should be as follows for a 128K byte tag:
 - (a) All Single Data Item records are retained to the memory limits of the database. When necessary, the truncation will be in the order of last posted -- first truncated. It is expected that all of the Single Data Item records will be retained for most applications.
 - (b) The Commodity records that exceed the remaining database memory are truncated in the order of last posted -- first truncated.
 - (c) For a truncated file, the order of records from first to last encoded on the tag will be:
 - Commodity Item records
 - Single Data Item records

E. Database search functions can be used to query the memory of a specific tag or a population of unknown tags for any database record field name. The searches are generated by identifying the field name (i.e., NOMENCLATR), an operator (i.e., EQUAL TO, NOT EQUAL TO, etc.), and a value that

has been entered into the field (e.g., DOOR, PANE), for example “NOMENCLATR EQUAL TO DOOR, PANE”. See Table 11 for database field names.

X. DATABASE COMMODITY ITEM RECORD

A. Table 11 shows the Commodity Item record format.

B. For ammunition shipments, the Commodity Item record can be in one of two forms; there is a header record for the general information and trailer records for specific Lot and Serial Number information, as described in following paragraphs.

Table 11. Commodity Item Record

Record Offset	Field Length	Field Name	Element Descriptor	Sustainment Element Status (not ammo)	Unit Move Element Status	Ammo Element Status	Sample Data
00	10	NOMENCLATR	Nomenclature	M	M	M	DOOR, PANE
10	15	DOCUMENT	Document Number	C	O	C	HK926A4 099A002
25	6	LIN	Line Item Number	C	C	M	
31	15	NSN	National Stock Number	M	M	M	254001269 9123
46	3	RIC	Routing Identifier Code	C	O	C	S9I
49	2	UNIT_ISSUE	Unit of Issue	C	M	M	EA
51	5	QUANTITY	Quantity Shipped	C	M	M	00001
56	1	COND_CODE	Condition Code	C	C	M	A
57	17	INT_TCN	Shipment TCN	M	M	M	HK926A4 099A002X XX
74	14	MISC1	User Remarks	C	O	C	DOOR, PANEL, R
88	16	MISC2	User Remarks	C	O	C	IGHT REAR

Element Status column identifies: M = mission essential data; C = conditional data (must be provided if available); O = optional data.

- Nomenclature is an abbreviated text identification of the item. A DD Form 1348-1A truncated Nomenclature or the TCMD T_6 Nomenclature is often used for this entry.
 - “UNKNOWN” should be encoded if the Nomenclature cannot be determined.
 - For ammunition records, this field may have an asterisk (*) in the first position to indicate that it is a trailer record with Lot or Serial Number information.
- Document Number may be sourced from the DD Form 1348-1A or other requisition/release documents that pertain to the line item.
- Line Item Number is a number used to identify property or materiel.

- It may be a number used to authorize and account for assigned property/equipment.
- For ammunition records, it will be the DOD Identification Code (DODIC).
- National Stock Number (NSN) may be sourced from the DD Form 1348-1A or a TCMD T_6 record. The 15 alphanumeric characters include the 13-character NSN and 2 Material Management Codes, as applicable.
 - CAGE + Part Number may be used if the NSN does not exist.
 - “NNSN” (no NSN) may be encoded if the NSN is unknown – as encoded in a TCMD.
- Routing Identifier Code (RIC) may be sourced from the DD Form 1348-1A. It should be the “shipper/from” RIC (rp 4-6).
- Unit of Issue (UI) may be sourced from the DD Form 1348-1A.
 - The UI information is not available from a TCMD and therefore must be extracted from user or system files.
 - The DOD UI Codes may be viewed in DOD 4100.39-M, Vol 10, Table 53. Codes commonly used are: EA = each; IN = inch; FT = foot, YD = yard, AY = assembly, BD = bundle, BE = bale, BX = box, BG = bag, GL = gallon, BL = barrel, CN = can, CY = cylinder, DR = drum, RO = roll.
- Quantity Shipped is determined by the shipper.
 - Information is not available from a TCMD and therefore must be extracted from user or system files.
 - For ammunition records, this field will be the total quantity shipped for header records or it will be the Lot quantity or Serial Number quantity for trailer records.
- Condition Code may be sourced from the DD Form 1348-1A or determined by the Consignor. The DOD codes may be viewed in DOD 4000.25-2-M. Codes commonly used are: A = serviceable; C = serviceable priority issue; F = unserviceable repairable.
- Shipment TCN is the first TCN marked on the packaging (the single shipment unit) for the documented item(s). The Shipment TCN could also be encoded in the RFID tag TAV Summary as the Lead TCN if the Shipment TCN has not been consolidated with other TCNs in the shipment.
- User Remarks (fields MISC1 and MISC2) are user defined data fields.
 - For most Commodity Item records, other than ammunition, these two fields are usually blank, but they may be used to encode remarks as either separate or conjoined fields. The field(s) could be used to document an item’s complete Nomenclature.
 - For ammunition records, the fields are used to encode Lot/Serial Number information as per following paragraphs.

C. Table 12 is a template for the Commodity Item data to show exact memory locations in the tag.

Table 12. Commodity Item Record Example

00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
D	O	O	R	,		P	A	N	E	H	K	9	2	6	A	4	0	9	9
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
A	0	0	2								2	5	4	0	0	1	2	6	9
40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
9	1	2	3			S	9	I	E	A	0	0	0	0	1	A	H	K	9
60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
2	6	A	4	0	9	9	A	0	0	2	X	X	X	D	O	O	R	,	
80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
P	A	N	E	L	,		R	I	G	H	T		R	E	A	R			
100	101	102	103																

NOTE: Blank cells represent ASCII 'space' characters.

D. Ammunition Commodity Item Records. The data specifications shown above are changed as follows:

1. Header record. The first ammunition Commodity Item record is a header record that may be followed by trailer records with related lot or serial number information.
 - Line Item Number: Instead of a LIN, this data element will be populated with the applicable DODIC.
 - Quantity Shipped: The Quantity Shipped data element for the Commodity Item header record is the total quantity of items shipped for the documented NSN (i.e., a sum total of trailer record Quantity Shipped data, as applicable).
 - User Remarks (MISC1 and MISC2): No remarks or data will be entered.
2. Trailer record. For each ammunition item with a Lot or Serial Number, a unique Commodity Item Lot/Serial trailer record will be generated after the Commodity Item header record. Except as noted below, the field data for the trailer record will be the same as the header record.
 - Nomenclature: The first position of the Nomenclature data element in a trailer record will contain an asterisk (*) followed by spaces to differentiate Commodity Item Lot/Serial trailer records from Commodity Item header records.
 - User Remarks (MISC1): For serialized items, this field will contain the Serial Number.
 - User Remarks (MISC2): This field will contain the Lot Number.
 - Quantity Shipped: The trailer record will reflect either the Quantity Shipped of a Serial numbered item or the Quantity Shipped of Lot numbered items.
 - If a Serial Number is listed in MISC1, with or without a Lot Number in MISC2, the Quantity Shipped data element (rp 51-55) in the trailer record should show a quantity of “00001”. Serial Numbers must always be unique and therefore only one can be listed in each record.
 - If Lot Number data is entered in MISC2 and MISC1 is empty, then the Quantity Shipped data element in the trailer record is for the Lot Number.

E. Table 13 is a template for the Commodity Item Lot/Serial trailer record data to show exact memory locations in the tag.

Table 13. Commodity Item Lot / Serial Trailer Record Example

00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
*										W	K	4	F	W	4	4	0	1	2
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
V	0	0	2		H	5	8	3			1	3	4	0	0	1	2	6	9
40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
9	1	2	3			S	9	I	E	A	0	0	0	7	0	A	W	K	4
60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
F	W	4	4	0	1	2	V	0	0	2	K	T	2						
80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
								H	1	5	1	C	4	5					

100	101	102	103

NOTE: Blank cells represent ASCII 'space' characters.

B. Table 14 is an example of ammunition Commodity Item records.

Table 14. Commodity Item Header and Lot / Serial Trailer Records Example

Memory Address	Stored Records									
	01	02	03	04	05	06	07	08	09	10
	01234567891	1234567892	1234567893	1234567894	1234567895	123456789				
	6	7	8	9	0123					
	NOMENCLTR	DOCUMENT NO.	LIN	NSN	RIC	UI	QTY	C	TCN	
		MISC1		MISC2						
528	ROCKET	WK4FW44012V002	H583	1340012699123	S9IEA00073AWK4					
	FW44012V002KT2									
632	*	WK4FW44012V002	H583	1340012699123	S9IEA00070AWK4					
	FW44012V002KT2			H151C45						
736	*	WK4FW44012V002	H583	1340012699123	S9IEA00001AWK4					
	FW44012V002KT2ABC0057			H151A21						
840	*	WK4FW44012V002	H583	1340012699123	S9IEA00001AWK4					
	FW44012V002KT2ABC0058			H151A21						
904	*	WK4FW44012V002	H583	1340012699123	S9IEA00001AWK4					
	FW44012V002KT2ABC0059			H151A21						

XI. DATABASE SINGLE DATA ITEM RECORD

A. The Single Data Item record format provides a database capability for encoding predefined data or user defined data which can be viewed via RF-ITV System server queries or via tag database searches using a fixed/mobile interrogator or HHI.

1. Predefined data. The predefined data definitions provide a common set of data headers which are considered to be part of the TAV Summary information that is available from an RF-ITV System server query report, as noted in following paragraphs.
2. User defined data. The user defined data information adds flexibility to the tag data specification and allows users to add data elements to the RFID tag's data structure. The user defined data information in a Single Data Record is shown in the Commodity section of an RF-ITV System server query report.

B. Tag database queries can be structured to search tag memory and retrieve the Single Data Item element information and the related tag ID number from amongst a population of RFID tags. If there is any data element that would be useful to identify when conducting a tag memory search for a specific data element, that data element should be encoded in a Single Data Item record. A tag database query does not have access to the tag's TAV Summary data section memory (see Paragraph III)

C. Most of the data elements for a Single Data Item record are optional entries except for those entries where the Single Data Item record provides the only means to capture required information in the RFID tag. There are three such conditional data elements that must be provided if available; they are the ISO/IEC Container Number, ammunition Hazard Class (HAZCLASS), and ammunition Net Explosive Weight (NEW).

D. The Single Data Item record uses only two of the database fields shown in Table 11. The two fields are the 14-character MISC1 field and the 16-character MISC2 field.

E. Table 15 shows the contents of each Single Data Item record in the database beginning at record offset 74. All nine data fields prior to record offset 74 in a Single Data Item record must be filled with blanks in order to overwrite any previous information written to tag memory. The data element status requirements (conditional or optional) for the MISC1 and MISC2 information are as shown in Table 16 and Table 18.

Table 15. Single Data Item Record

Record Offset	Field Length	Field Name	Element Descriptor	Sample Data
74	14	MISC1	Data Header	SERVICE
88	16	MISC2	User Data	ARMY

- Data Header (field MISC1) is either predefined (see Table 16 and Table 18) or user defined (see Table 16).
- User Data (field MISC2) entries are the respective user data for the MISC1 data headers.
 - For the predefined MISC1 data headers, the MISC2 user data elements and their header titles may be visible in the TAV Summary section of an RF-ITV System server tag query report. Predefined Single Data Item data headers that duplicate TAV Summary elements (see Table 4 and Table 6) are only shown once (i.e., POE, POD, Consignee DODAAC, and Cargo Type (HAZMAT)).

- The Single Data Item TCN is not shown – it is not a full length 17-character TCN.
- The Single Data Item Container Number (full length) will be shown instead of the TAV Summary Container Code (abbreviated length).
- For user defined MISC1 data headers, the Single Data Item records will only be shown in the Commodity section of an RF-ITV System server tag query report.
- All characters entered into the MISC2 field should be upper case because HHI search routines of a tag’s database are case sensitive. The searches are generated by identifying the field name (i.e., MISC2), an operator (i.e., EQUAL TO, NOT EQUAL TO, etc.), and a value that has been entered into the field (e.g., HK926A), for example “MISC2 EQUAL TO HK926A”.

Table 16. Single Data Item Examples
(Data examples are not interrelated)

MISC1 Data Headers	Element Status	MISC2 User Data
PREDEFINED INFORMATION		
SERVICE	O	ARMY
CONTAINER NUM	C	BHCU4750054
COMM CLASS	O	IX
LEAD TCN	O	SW31244112V002KT
OPERATION	O	OIF
HAZMAT CODE	O	X
POE	O	1G9
POD	O	PL3
CONSIGNEE	O	HK926A
USER DEFINED INFORMATION EXAMPLES		
HAZCLASS	C	1.1E
NEW	C	230
ORIGIN GEOLOC	O	HGQH (FORT LEE)
DESTINATN GEO	O	BAAS (BALAD IZ)
MANIFEST NUM	O	PL360390014
PROJECT	O	1AD
SHIP TO RIC	O	WP6
ULN	O	E123R
UIC	O	B23456
BUMPER NUM	O	246CO123

Element Status column identifies: C = conditional data (must be provided if available); O = optional data.

- Service is the DOD department of the Consignee receiving the shipments packaged within a conveyance container.
- Container Num identifies the complete serialized identification number of the conveyance container, which may be a 463-L System pallet ID number. For commercial SEAVANs, the owner marked container identification number (11 characters) is usually assigned in accordance

with ISO/IEC 6346 and includes the Owner Code and Equipment Category Identifier (4 characters), the Serial Number (6 digits), and the Check Digit (1 digit). It does not include a dash (-), space, slash (/), or other discriminating mark that sometimes sets off the Check Digit from the Serial Number.

- **Comm Class** identifies the commodity class of the cargo in terms as defined by DOD. There are ten categories into which supplies are grouped in order to facilitate supply management and planning.
 - I: Rations and gratuitous issue of health, morale, and welfare items.
 - II: Clothing, individual equipment, tentage, toolsets, and administrative and housekeeping supplies and equipment.
 - III: Petroleum, oils, and lubricants.
 - IV: Construction materiel.
 - V: Ammunition.
 - VI: Personal demand items.
 - VII: Major end items, including tanks, helicopters, and radios.
 - VIII: Medical.
 - IX: Repair parts and components for equipment maintenance.
 - X: Nonstandard items to support nonmilitary programs such as agriculture and economic development.
- **Lead TCN** is the conveyance container or manifest Transportation Control Number.

NOTE: The data field is only 16 characters so the 17th position of the TCN will be truncated in tag memory. This is a problem for tag searches that cannot be overcome with this format version.

- **Operation** is a code name assigned by DOD or a user to identify the supported activity of the shipment.
- **HAZMAT Code** flags hazardous or non-hazardous conditions of the shipment. The code may be extracted from the second position of the TCMD Document Identifier Code (see DTR Part II Appendix DD). Examples of the most used codes are:
 - E** = ammunition/explosives.
 - J** = hazardous materials (except ammunition/explosives and ORM-D hazards).
 - V** = Government vehicles, trailers, wheeled guns, and aircraft.
 - X** = shipments (including those with ORM-D hazards) not covered above.
- **POE** is the Port/Point of Embarkation Code for the conveyance container. Use DTR specified codes. Inland Location Codes must not be used for shipments transiting air or sea ports of embarkation.
- **POD** is the Port/Point of Debarkation Code for the conveyance container. Use DTR specified codes. Inland Location Codes must not be used for shipments transiting air or sea ports of debarkation.
- **Consignee** is the DODAAC for the unit that will receive the conveyance container for receipt processing (the final receiving entity for the conveyance container).

NOTE: The following descriptions for user defined headers are provided because they are conditional entries for ammunition/explosive records. These data headers were added to the tag data specification and were not part of the original tag data format that established the predefined headers.

- **HAZCLASS** is the United Nations Class or Division Number for the hazardous cargo – may include the Compatibility Code as listed in 49 CFR 172.101.
- **NEW** is the total net explosive weight of the cargo loaded in/on the conveyance container.

F. Table 17 is a template for the Single Data Item record data to show exact memory locations in the tag.

Table 17. Single Data Item Record Example

00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	
60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	
															S	E	R	V	I	C
80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	
E								A	R	M	Y									
100	101	102	103																	

NOTE: Blank cells represent ASCII 'space' characters.

G. Prepositioned Equipment Single Data Items (see Table 18). For the predefined MISC1 data headers listed below, the MISC2 user data entries are modified as follows:

- OPERATION: enter "PREPO".
- POD: enter "XXX" which will cause the tag data to replicate to all RF-ITV System servers.
- CONSIGNEE: enter the Consignor DODAAC (i.e. use the same code for Consignor and Consignee).

Table 18. Single Data Item Prepositioned Equipment Examples

MISC1 Predefined Headers	Element Status	MISC2 Sample Data
SERVICE	O	ARMY
CONTAINER NUM	C	GATU0511925
COMM CLASS	O	IX
LEAD TCN	O	WB34W40189V002KK
OPERATION	C	PREPO
HAZMAT CODE	O	X
POE	C	1P5
POD	C	XXX
CONSIGNEE	C	WB34W4

Element Status column identifies: C = conditional data (must be provided if available); O = optional data.

XII. TCMD DATA

- 80-character records
- 79 records maximum
- Starts at Extended Memory address 124731

A. TCMD data records are conditional (must be provided if available) for the DOD RFID tag. If a TCMD record is provided, the data element entries are conditional.

B. Record format is standard 80-character format in accordance with DTR 4500.9-R, Part II. Each memory position in the TCMD record must be encoded with alphanumeric data values, including spaces, when a record is created. The records are not followed by a carriage return and/or line feed combination. See the example below for more information.

C. If the total number of TCMD records exceeds 79, then all T_9 records should be dropped. If the number of remaining TCMD records exceeds 79, then all T_7 records should be dropped. If the number of TCMD records continues to exceed 79, then all T_6 records should be dropped. If the number of TCMD records continues to exceed 79, then all T_5 records should be dropped. In the worst case, only the T_1, T_2, or T_3 records along with the remaining T_4 records would be stored in the tag.

NOTE: Some tag applications now truncate the TCMD record set in a manner that retains the shipment unit header records (all records specifically related to the prime document header record). The entire TCMD record set is truncated from the last record in the set to the 79th remaining record without regard for eliminating records with specific Document Identifier codes (T_4 to T_9).

D. The RFID tag write transaction sent to the respective RF-ITV System server must include all the dropped TCMD records.

E. Table 19 is an example of database records (11) and TCMD records (6) encoded in an RFID tag.

Table 19. Database and TCMD Records Example

Starting Memory Address	Stored Records										
	Commodity Record Memory Position and Data Title										
	0	1	2	3	4	5	6	7	8	9	
	6	7	8	9	0	1	2	3	4	5	6
	NOMENCLTR	DOCUMENT NO.	LIN	NSN		RIC	UI	QTY	C	TCN	
		MISC1		MISC2							
528	DOOR, PANEHK926A4099A002			2540012699123		S9IEA00001AHK9					
	26A4099A002XXXDOOR, PANEL, RIGHT REAR										
632	CAN, GASOLHK926A40950004			8010009588148		S9IEA00500AHK9					
	26A40950004XXXMARK FOR C CO. SSG A. JONES										
736		SERVICE		ARMY							
840				CONTAINER NUM BHCU4750054							

Starting Memory Address	Stored Records								
	Commodity Record Memory Position and Data Title								
	012345678911234567892123456789312345678941234567895123456789	6	7	8	9	0123			
	NOMENCLTR	DOCUMENT NO.	LIN	NSN	RIC	UI	QTY	C	TCN
		MISC1		MISC2					
944		COMM CLASS		IX					
1048		LEAD TCN		SW31244112V002KT					
1152		OPERATION		OIF					
1256		HAZMAT CODE		X					
1360		POE		1G9					
1464		POD		PL3					
1568		CONSIGNEE		HK926A					
1672		ORIGIN GEOLOC		HGQH (FORT LEE)					
1776		DESTINATN GEO		BAAS (BALAD)					

	TCMD Record Position				
	123456789112345678921234567893123456789412345678951234567896	7	8		
124731	TX275005BHCU207009Z 1G9PL3VZCSW31244112V002KT2HK926A3140S991 22J10650021052601000				
124811	TX975005X629607009Z 1G9PL3V20SW31244112V002KT2HK926A3VN00475 005-400003456SEAU 1				
124891	TX475005SW31237009Z 1G9PL3VBXHK926A4099A002XXXHK926A3142 1 054A1230001000530008				
124971	TX675005 7009Z 1G9PL3VBXHK926A4099A002XXXHK926A31254001 269123DOOR, PANEL, R				
125051	TX475005SW31237009Z 1G9PL3VBXHK926A40950004XXXHK926A3142 1 054A1230020052070992				
125131	TX675005 7009Z 1G9PL3VBXHK926A40950004XXXHK926A37240013 375268CAN, GASOLINE				

XIII. ERASING AND FORMATTING AN RFID TAG

A. Erase. To erase a formatted DOD RFID tag would require extended processing times to overwrite the old data with spaces or zero entries. The alternative is to overwrite selected values in the tag so that systems attempting to read the tag get either errors or no information. Write the following information – see Table 3:

- TAV Summary type: “F” at address location 0001

Note. “F” is a legacy code that indicated a Free Text format, which was never implemented by any of the RFID write applications.

- Item record count: “0000” at memory locations 0006-0009
- TCMD record count: “0000” at memory locations 0015-0018

B. Format. If a tag is not in the DOD format, the procedure is to enter the format type in Standard Memory, add the Database Pre-header and Header information to Extended Memory, and enter the Erased format values. The following procedure will format a tag:

- Change the Standard Memory File Type to hexadecimal values: address 15 = 0xE0, address 16 = 0x01, and address 17 = 0x02. See Table 1.
- Create Database Pre-header entries as described in Table 8 and Table 9.
- Create Database Header entries as described in Table 10.
- Write the following information – see Table 3 and Table 10:
 - TAV Summary type: “F” at address location 0001

Note. “F” is a legacy code that indicated a Free Text format, which was never implemented by any of the RFID write applications; thus, the format was removed from this current specification of JD TAV v2.0 (INCITS).

- Item record count: “0000” at memory locations 0006-0009
- TCMD record count: “0000” at memory locations 0015-0018
- Database record count: “1150” at memory locations 0512-0513

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