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SPACE SURVEILLANCE OPERATIONS - EVENT PROCESSING (U)

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(U) This SD implements the Unified Command Plan (UCP) and provides procedures and guidance for worldwide Space Surveillance Operations. In addition, it is in compliance with the requirements as identified in the Joint Requirements Oversight Council (JROC) approved Capstone Requirements Document (CRD). This SD applies to United States Strategic Command (USSTRATCOM), including the Cheyenne Mountain Operations Center (CMOC) and Joint Intelligence Center (JIC); the USSTRATCOM operational component commands (Air Force Space Command, Naval Space Command, and Army Space and Missile Defense Command); 21st Space Wing, 30th Space Wing, 45th Space Wing, 50th Space Wing, 21st Operations Support Squadron, 1st Space Control Squadron, and all Space Surveillance Network (SSN) sites including Royal Air Force (RAF) Fylingdales and Globus II, located in Vardo, Norway. In addition, RAF Fylingdales follows guidance specified in reference (a).

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(U) The SSN uses a set of standard formatted messages to facilitate information flow. Messages identified by message number (AANN) can be found on-line in the Integrated Weapon System Database (IWSD) managed by Electronic Systems Center/Command and Control Directorate (ESC/NDC) at Peterson Air Force Base (AFB), CO. The SSN must use specified message format or its Advanced Data Communications Control Procedures (ADCCP) equivalent. Free text message formats are described in the attachments. Detailed information on the message construction may be obtained by visiting the IWSD website. Contact ESC/NDC for access to the database (iwsd@cisf.af.mil, DSN 834-2467).

(U) This SD may be supplemented as necessary. If there is conflict between this SD and unit, contractor or component command publications, this SD takes precedence. The reporting requirements in this SD are exempt from Report Control Symbol (RCS) licensing in accordance with reference (b) that controls internal, public, and interagency Air Force information collections. Submit recommended changes to USSTRATCOM/OP50.

SUMMARY OF REVISIONS

(U) This SD has been revised in its entirety. The text has been reorganized into a more logical sequence, so all procedures for each particular type of event are discussed together, and in the chronological order in which they actually occur. The text has also been rewritten for clarity, and updated to reflect current organizations. Directions and explanatory information not pertaining to all sites and not needed for standardization among all units have been removed. (Supplements to this SD should contain further details appropriate to commands below the unified level).

(U) In the interest of clarity, the Space Control Center (SCC) will refer to the Operations Center performing the space control command and control duties at that time. There is no delineation between the SCC and the Alternate SCC except in cases of CMOC/SCC specific functions that will be identified.

(U) Significant content changes include:

-Division into two volumes

--Volume 1 – Basic Operations

--Volume 2 – Event Processing

- Addition of several new chapters:

-- Continuity of Operations

-- Sensor Calibration

-- Breakup

-- Satellite Separations and Deorbits

-- Orbital Safety

- Deletion of AKAC-222 encryption/decryption requirements

Chapter 1

TASKING CATEGORIES AND SUFFIXES (U)

1.1. (U) General. As the number of objects in earth orbit continues to grow, the SSN must be used efficiently in order to track all of these objects with its limited resources. Sensor management is the efficient use of the network in acquiring the appropriate amount of observational and Space Object Identification (SOI) data on all Earth satellites. This process is complicated by many factors. The most important limiting factor is the scarcity of sensors compared to the large number of space objects. Not only are there not enough sensors to track all space objects continuously, the sensors have significantly different capabilities, limitations, and mission priorities. Every space object to be tasked for sensor tracking is assigned a category and a suffix to regulate the flow of data from the SSN to the SCC and the Joint Intelligence Center (JIC). Category and suffix describe the priority of an object and the amount of observations required. For fixed sensors like radar detection fans and the Naval Space Surveillance System (NSSS) (formerly NAVSPASUR or the Naval Space Command (NAVSPACECOM) Fence) tasking categories define both the priority and the observational data requirements; since they will obtain one observation on every pass of every satellite visible these sensors are not assigned tasking suffixes.

1.2. (U) Tasking Rationale. When tasking a sensor to collect observational data on a space object, take into account the other requirements for observations on other satellites, consideration of the sensor types providing the observations, and the sensor network's capability to collect all required observations. Sensor tasking is a process by which observation requirements are set for each satellite. Tasking can be modified to increase the resulting accuracy in element sets (ELSETS)/state vectors. Observations are regulated so each satellite can be tracked properly with efficient use of the SSN. The method used to accomplish this efficiency is "selective tasking." Rather than allowing each sensor to track the objects it feels are most important, a centralized tasking program is used so observations from all sensors are balanced among all objects in space.

1.3. (U) Tasking Concepts. Selective sensor tasking is based on two underlying concepts:

1.3.1. (U) Observation Regulation. The number of observations collected on each individual satellite is limited to that which will maintain the accuracy of its element set at an acceptable level. High-interest active payloads may be tracked every hour or two (or as needed to meet the mission), while dead payloads and debris may be tracked only once per day. If excess data is collected on a particular satellite, sensor resources are taken away from other satellites, and the SSN is not being used most efficiently.

1.3.2. (U) Observation Dispersion. For the most accurate orbit determination, observations should be taken at different positions on a satellite's orbital path. Ideally, observations should cover the full 360 degrees of an orbit, but realistically the SSN cannot provide this kind of coverage. Sensor tasking, therefore, is designed to provide as much coverage of the satellite's orbit as possible. The SCC normally requires this dispersion of observations only on high-interest satellites, while most routine objects can be acceptably maintained with fewer, less dispersed observations. Too few observations result in poor ELSET quality that negatively affects catalog accuracy and ultimately space event analysis (i.e., conjunction assessment).

1.4. (U) Tasking Categories. Categories set the priority for taking observations, as well as the transmission precedence. This priority system resolves tracking conflicts which occur when two or more satellites are in the sensor's coverage at the same time, and not enough time or radar energy is available to track them both. ELSET quality and age in part determine the tasking category. As the ELSET age increases, or quality decreases, the tasking category will increase.

1.4.1. (U) **Category 1** (CAT 1).

1.4.1.1. (U) Definition. Used for special events of highest priority. This category is used for objects requiring near instantaneous observational data transmittal for threat assessment. Examples: New Foreign Launches, Satellites in final stages of decay, and maneuvers.

1.4.1.2. (U) Transmission Precedence. Observations are sent from the sensors to the SCC using IMMEDIATE precedence unless FLASH is requested.

1.4.2. (U) **Category 2** (CAT 2).

1.4.2.1. (U) Definition. Used for special events of high priority or any ELSET that may be significantly old. Examples: High Interest Tasking (HIT) payloads, deorbiting payloads, domestic launches, Shuttle, special tests and projects, and Reentry Assessment (RA) satellites in the initial stages of decay.

1.4.2.2. (U) Transmission Precedence. Observations are sent from the sensors to the SCC at PRIORITY precedence unless IMMEDIATE is requested.

1.4.3. (U) **Category 3, 4, 5** (CAT 3, 4, 5).

1.4.3.1. (U) Definition. All routine satellites. The appropriate category is assigned to individual objects via the AUTOTASKER program then relayed to the sensors in the Sensor Tasking message. Examples: Rocket bodies, platforms, pieces of debris not in any state of decay, and dead payloads.

1.4.3.2. (U) Transmission Precedence. Observations are sent from the sensors to the SCC at ROUTINE precedence unless otherwise requested.

1.5. (U) Tasking Conflicts. If a conflict develops between two events of the same category, resolve it according to the following guidelines:

1.5.1. (U) **CAT 1.** Prioritize near earth New Foreign Launch (NFL) payloads over CAT 1 deep space objects. Prioritize a deep space payload prior to ELSET 1 over its associated near earth rocket body and debris. Call the SCC to resolve conflicts between a Priority 1 search and another CAT 1 tasking, or between any other two CAT 1 objects.

1.5.2. (U) **CAT 2.** CAT 2T objects take precedence over all other CAT 2 taskings. Additionally, nominal passes have priority over marginal passes. Call the SCC to resolve conflicts if necessary.

1.5.3. (U) **CATs 3, 4 and 5.** Resolve any conflicts within categories 3, 4 and 5 on site.

1.5.4. (U) Metric Versus SOI. In general, consider metric tasking a higher priority than SOI. If possible, collect tasked metric and SOI data simultaneously on the same satellite pass. Call the SCC for guidance in specific cases.

1.6. (U) Tasking Suffixes. Tasking Suffixes define the amount of observational data required and the frequency of data collection (see **Table 1.1.**).

1.7. (U) Track Requirements for Near Earth Sensors.

1.7.1. (U) Scheduling. For all suffixes requiring track at maximum available elevation/ boresight (defined as a line of sight perpendicular to the array face, normally applies to phased array radars) schedule track at maximum elevation if this provides the best quality data. If not, take the best observations possible on the object.

1.7.2. (U) Spacing. If unable to comply with suffix requirements for track during ascending/ descending passes, attempt to take observations at different times on subsequent days. The intent of this requirement is to obtain observations throughout an object's orbital path, not always in the same part of its orbit. For suffixes requiring alternating ascending/descending passes (defined as site passes that occur on the same side of a satellite's orbit as the ascending or descending node) once per day, scheduling one type on odd days and one type on even days will meet this requirement. If one or more of those days are missed, the next may be taken as originally scheduled. Separate all observations by a minimum of 6 seconds unless otherwise directed by the SCC.

1.8. (U) Track Requirements for Deep Space Sensors.

1.8.1. (U) Scheduling.

1.8.1.1. (U) For tracking deep space objects, use suffixes only to determine the number of observations required and the number of passes required. All suffix specifications on scheduling, such as ascending/descending nodes and maximum elevation, may be ignored. (**NOTE:** Normally only those suffixes calling for one pass per day will be used to task geosynchronous objects; suffixes requiring multiple passes are not normally used for those geosynchronous objects, but if used should be interpreted as one pass.).

1.8.1.2. (U) Tracks should be scheduled to achieve maximum quality of observations, taking into account refraction effects near the horizon, angle rates, range, visibility, manning, and any other site-specific scheduling parameters. Sites should strive to sample different parts of the orbit on different attempts.

1.8.2. (U) Spacing.

1.8.2.1. (U) Separate all observations by a minimum of 30 seconds unless otherwise directed by the SCC.

1.8.2.2. (U) Optical Tracks. Optical tracks will meet the Metric Tasking Category and Suffix requirements.

Table 1.1. (U) Metric Tasking Suffixes. (U)

SUFFIX	DEFINITION
A	For radars, take all possible obs on all passes for a maximum of 50 obs per pass. For opticals, take all possible obs for a maximum of 50 obs per shooting period.
B	For radars, take 10 obs on all passes, centered at maximum available elevation or on boresight. For opticals, take 10 obs per shooting period.
C	For radars, take 5 obs on all passes, centered at maximum available elevation or on boresight. For opticals, take 5 obs per shooting period.
D	For radars, take 3 obs on all passes, centered at maximum available elevation or on boresight. For opticals, take 3 obs per shooting period.
E	For radars, take 1 observation on all passes, centered at maximum available elevation or on boresight. For opticals, take 1 observation per shooting period.
F	Take 2 passes per day, 1 ascending and 1 descending node. Mechanical radars take 6 obs per pass, Phased Arrays take 3 obs per pass, and Optical sensors take 8 obs per pass.
G	Take 1 pass per day, alternating between ascending and descending nodes. Mechanical radars take 6 obs per pass, Phased Arrays take 3 obs per pass, and Optical sensors take 8 obs per pass.
H	Take 1 pass per day, centered at maximum available elevation or on boresight. Mechanical radars take 6 obs per pass, Phased Arrays take 3 obs per pass, and Optical sensors take 8 obs per pass.
J	Take 2 passes per day, 1 ascending and 1 descending node. Mechanical radars take 3 obs per pass, Phased Arrays take 1 observation per pass, and Optical sensors take 5 obs per pass.
K	Take 1 pass per day, alternating between ascending and descending nodes. Mechanical radars take 3 obs per pass, Phased Arrays take 1 observation per pass, and Optical sensors take 5 obs per pass.
L	Take 1 pass per day, centered at maximum available elevation or on boresight. Mechanical radars take 3 obs per pass, Phased Arrays take 1 observation per pass, and Optical sensors take 5 obs per pass.
M	Take 1 pass per day, ascending node only. Mechanical radars take 6 obs per pass, Phased Arrays take 3 obs per pass, and Optical sensors take 8 obs per pass.
N	Take 1 pass per day, descending node only. Mechanical radars take 6 obs per pass, Phased Arrays take 3 obs per pass, and Optical sensors take 8 obs per pass.

O	(May be used for calibration satellites.) Take 2 passes per day with maximum separation between passes and 9 obs per pass for all sensor types.
P	Take 1 pass per day, ascending node only. Mechanical radars take 3 obs per pass, Phased Arrays take 1 observation per pass, and Optical sensors take 5 obs per pass.
Q	Take 1 pass per day, descending node only. Mechanical radars take 3 obs per pass, Phased Arrays take 1 ob observation per pass, and Optical sensors take 5 obs per pass.
R	All passes, centered at maximum available elevation or on boresight. Mechanical radars take 10 obs per pass, Phased Arrays take 10 obs per pass, and Optical sensors take 16 obs per pass.
S	Search tasking. All passes, centered at maximum available elevation or on boresight, with an in-track and cross-track search (+ / - 5 minutes early/late and 0.5 degrees in inclination in both directions, or as otherwise determined by site capabilities). Mechanical radars take 10 obs per pass, Phased Arrays take 10 obs per pass, and Optical sensors take 16 obs per pass.**NOTE:** The first sensor to track objects in transfer or final orbit is required to collect sufficient obs to generate an ELSET on each piece.
T	(Final RA tasking.) All passes. Mechanical radars take 10 obs per pass, Phased Arrays take 10 obs per pass, and Optical sensors take 16 obs per pass.
U	Take 2 passes per day, separated by the maximum time separation possible. Mechanical radars take 5 obs per pass, Phased Arrays take 5 obs per pass, and Optical sensors take 5 obs per pass.

Chapter 2

METRIC TASKING (U)

2.1. (U) Daily Tasking. The SCC transmits a Sensor Tasking message (SU66) listing each sensor's metric tasking for the following day. The Sensor Tasking Update message (SU67) makes changes to a site's tasking on only specific objects. Special events may require special tasking from the SCC which supplements or supersedes the Sensor Tasking message.

2.2. (U) Ground-Based Electro-Optical Deep-Space Surveillance (GEODSS) System Network Tasking. All tasking for the GEODSS network is routed through the Optical Command, Control, Communications Facility (OC3F) at Edwards AFB, CA. The SCC transmits the Sensor Tasking message (SU66) to OC3F for each GEODSS site between 0800Z and 1000Z. The OC3F cannot process any Sensor Tasking message sent which does not specify a particular GEODSS site.

2.3. (S) (b)(1) USSC (b)(1) USSC

2.4. (U) Verbal Tasking.

2.4.1. (U) Tasking by the SCC.

2.4.1.1. (U) The SCC may change a site's current tasking on a particular object, either verbally or by special message, at any time. This is done for HIT objects and new space events. The verbal/special tasking remains effective until the next Sensor Tasking message (SU66) is received or until sensors are notified to cancel that tasking and return to the original tasking. When an object is cancelled the SCC will take appropriate action to ensure it is removed from the tasked objects' list.

2.4.1.2. (U) The SCC normally will task the Optical Network only for deep space payloads that have not achieved final orbit, semi-synchronous and Molniya objects. If there are any routine HIT objects tasked to optical sensors they must be included in the Sensor Tasking message (SU66).

2.4.2. (U) Tasking by Outside Agencies. Occasionally outside agencies will request support from particular space surveillance sites. Any special support to other agencies must be approved in advance with the appropriate component authority and coordinated with Space Operations Division (CMOC/J3S). The SCC has final authority on all tasking and may recall a sensor in accordance with (IAW) recall procedures at any time while in support of an outside agency. Sites must inform the SCC and the appropriate component headquarters if any tasking is received from unauthorized channels.

2.5. (S) (b)(1) USSC (b)(1) USSC (b)(1) USSC

2.5.1. (S) (b)(1) USSC

2.5.2. (S) (b)(1) USSC

(b)(1) USSC

2.5.3. (U) Domestic and cooperative deep space payloads until the object achieves final orbit.

2.5.4. (U) Other special interest items as determined by the SCC, CMOC/J3S, OIW or JIC.

2.5.5. (U) HIT List objects are included in the daily Sensor Tasking message (SU66), but tasking may be changed verbally by the SCC as needed. The SCC also sends out a weekly message listing Positive/Negative (POS/NEG) reportable satellites in order to alert sensors to do POS/NEG voice reporting on those satellites as directed in **Chapter 14**.

2.6. (U) Supplemental Tasking. Sites may contact the SCC to request additional tasking above what is in its normal Sensor Tasking message (SU66). The extra tasking will be sent from the SCC to the requesting sensor site in a Supplemental Tasking Message (SU56). Supplemental tasking will only be accomplished if all assigned tasking has been met and sites will not be held accountable for not accomplishing it. Supplemental tasking may be input manually or automatically, so long as it does not take precedence over the Sensor Tasking message.

2.7. (U) Tasking Verification. To verify tasking on any object, call the SCC.

2.8. (U) Sensor Tasking Feedback. Sites report weekly to the SCC the percentage of time they actually performed metric tracking in response to tasking. In turn, the SCC compiles data on how well each sensor responded to tasking, and forwards it to the individual sites. See reference (c) for more information.

2.9. (U) Metric Observation Transmission Requirements.

2.9.1. (U) Response Time. Sites must send metric observations to the SCC within the time constraints specified in **Table 2.1.** measured from the end of track to the start of data transmission to the SCC. Although contributing sensors are not bound by these requirements they should attempt to meet them as much as possible. These response times must be met to support the quality of orbital element sets. Delay in getting observations increases the average age of ephemeris data, decreases the SCC's accuracy of predicting satellite positions and prevents processing a critical space event in a timely manner.

2.9.2. (U) Transmission Means.

2.9.2.1. (U) Send near and deep space observations to the SCC by the fastest available route. If data is not sent during an exercise or test, store all data and immediately send all CAT 1 and CAT 2 observations after the exercise or test is completed. Send the remainder of observations as time and priorities permit (see appropriate component regulations for specific guidance).

2.9.2.2. (U) Ensure all deep space metric observations and SOI data are supplied to Millstone in a timely manner.

Table 2.1. (U) Observation Transmission Requirements. (U)

CAT	Near Earth Sensors	Optical Deep Space Sensors	All other Deep Space Sensors
1	5 Minutes	30 Minutes	5 Minutes
2	1 Hour	30 Minutes	30 Minutes
3	8 Hours	2 Hours	2 Hours
4	8 Hours	4 Hours	4 Hours
5	8 Hours	8 Hours	8 Hours

2.9.3. (U) Data Retransmission. If the SCC does not receive observations from sites it may verbally ask for retransmittal. Sites will retransmit any requested data up to 30 days old as soon as possible.

2.9.4. (U) Metric Data Collection. If metric data is collected while taking SOI on an object, send the metric observations to the SCC even if not specifically tasked for them on that object.

2.10. (U) Search Tasking Plan. The Search Tasking Plan designs a network search plan to find space objects whose current element sets are unknown. Applicable sensors are tasked to search a volume of uncertainty in a coordinated manner to maximize search efficiency.

2.10.1. (U) SCC Actions for Search Tasking Plan. The SCC will provide a pointer element set, along with inclination and period uncertainty factors, and calculate the volume of space defined by those inputs. The SCC will then design a search plan and assign sensors to search particular parts of the volume at appropriate times until the entire volume has been covered. The appropriate sensors are then tasked via message.

2.10.1.1. (U) Tasking. The Sensor Search Message (SU57) will provide the search priority and start/stop times of the search for each sensor, as well as explicit search parameters such as "from" and "to" azimuths, elevation and range. See **Attachment 2** for message headers. A "pointer" ELSET will also be listed in this message for use by those sites that cannot use the raw search parameters. See **Attachment 3** for Satellite Numbering Scheme.

2.10.1.2. (U) Tasking Termination. A search plan ends when the SCC terminates it manually (because the object is found, for instance), when it reaches the end of its planned search time or when it reaches 60 minutes of uncertainty in period. A Sensor Search Termination message (SU58) is transmitted to inform sites. Message headers are the same as the Sensor Search Message.

2.10.2. (U) Site Response To Search Plan Tasking.

2.10.2.1. (U) Search. Attempt acquisition based on the search parameters given in the Sensor Search Message.

2.10.2.1.1. (U) Search + / - 4 minutes on the "pointer" ELSET in the message between the start and stop times given, if unable to use the raw search parameters.

2.10.2.1.2. (U) The pointer ELSET is unique to the pass for which it is generated and should not be used for other passes.

2.10.2.2. (U) Search Priorities (1 - 5). In the event of a conflict use the guidelines in paragraph **1.5.**

2.10.2.2.1. (U) PRIORITY 1. Used for special events of highest priority as determined by the SCC crew commander.

2.10.2.2.2. (U) PRIORITY 2. Used for special events of high priority as determined by the SCC crew commander.

2.10.2.2.3. (U) PRIORITY 3, 4, 5. Used for routine satellites as determined by the SCC crew commander.

2.10.2.3. (U) Collection Requirements. Collect a minimum of five observations within 90 seconds on as many objects that pass through the search area within the performance constraints of the sensor. Transmit observations to the SCC as Critical Uncorrelated Targets (UCTs), if possible. However, sites not capable of retagging observations may send observations using the pointer ELSET number.

2.10.2.4. (U) Voice Reports. Report both positive and negative acquisitions on each pass of a search plan or analyst satellite to the SCC within 5 minutes after end of track. Use the following procedures:

2.10.2.4.1. (U) Pass POS acquisition using the UCT Voice Report Format. See **Attachment 4** for voice format.

2.10.2.4.2. (U) Pass negative (NEG) acquisition using the POS/NEG Voice Report Format using secure voice. Prepare a Miss Report message if directed by the SCC. See **Attachment 2** for report format.

2.10.2.5. (U) Data Transmission. Send observations at IMMEDIATE precedence or at FLASH precedence if directed by the SCC.

2.10.3. (U) Event Termination. At the end of each search pass, delete the pointer ELSET for that pass. Upon receipt of a Sensor Search Termination message (SU58) from the SCC, return to normal tasking.

Chapter 3

SPACE OBJECT IDENTIFICATION (SOI) TASKING (U)

3.1. ~~(S)~~ General. (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

3.2. (U) Tasking Concept. SOI tasking is functionally divided into five types:

3.2.1. ~~(S)~~ Automatic Tasking. (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

3.2.2. ~~(S)~~ Project Sensor Tasking. (b)(1) USSC
(b)(1) USSC

3.2.3. ~~(S)~~ Monthly Tasking. (b)(1) USSC
(b)(1) USSC

3.2.4. (U) SCC Support Tasking. As required, the SCC may task SOI-capable sites to support surveillance on a particular object of interest by requesting Radar Cross Section (RCS) data for piece discrimination. (See **Table 3.1.** for tasking requirements.) Piece discrimination means identifying whether a tracked object is a payload, rocket body, or debris. Radar sites identified as primary space intelligence sites are responsible for providing real-time piece discrimination or RCS data when tasked.

3.2.5. (U) Special Tasking. The SCC will task sites via voice or message whenever automatic, project site, or monthly tasking is not enough to facilitate data requirements on a particular event. SOI special tasking instructions should include the object number, tasking category and suffix, tasking duration or date required, and any special instructions.

3.3. (U) Tasking Suffixes. Tasking Suffixes define the amount of observational data required and the frequency of data collection. There are two groups of SOI suffixes one pertains to Narrowband (see **Table 3.1.**) and the other to Wideband (see **Table 3.2.**).

Table 3.1. (U) Narrowband SOI Tasking Suffixes. (U)

RADAR SOI TASKING SUFFIXES	
SUFFIX	**DEFINITION**
V	Track must be at least 3 minutes long, centered on crossover (point where object is nearest to radar).
W	Track must be at least 3 minutes long, centered on crossover, with crossover elevation greater than 30 degrees.
Y	Track must contain two complete rotational periods of the object, or 4 minutes of data (whichever is longer).
Z	Collect data as specified in the tasking message.
OPTICAL SOI TASKING SUFFIXES	
SUFFIX	**DEFINITION**
W	Collect a minimum of 3 minutes of data.
Z	Collect data as specified in the tasking message.

Table 3.2. (U) Wideband SOI Tasking Suffixes. (U)

RADAR SOI TASKING SUFFIXES	
SUFFIX	**DEFINITION**
W	Assume stable, track twice per week in daylight at any elevation, and transmit 35 images each pass.
X	Assume stable, track once per week above 25 degrees elevation, and transmit 16 images..
Y	Assume rotating with a 500-second period, track twice per week at any elevation, transmit 35 images.
Z	Assume rotating with a 50-second period, track once, and transmit 35 images.
NOTE: Sites are required to collect the images throughout the entire pass, not continuous collection for only the first few minutes of the pass. Proper collection of images requires a representative span across the orbit. For example, the suggested image interval at site for the stable CAT 2W and CAT 2X cases is to image 2 degrees, skip 4 degrees, image 2 degrees, skip 4 degrees and so forth.	

3.4. (U) SOI Observation Transmission Requirements.

3.4.1. (U) General. Sites will follow the data collection and reporting instructions in the automatic tasking requirements, and/or in the SOI tasking messages or verbal requests from the JIC or the SCC.

3.4.2. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

3.4.3. (U) Transmission Means. Send observations to the USSTRATCOM/OP24 at IMMEDIATE precedence.

3.4.4. (U) Retransmission of SOI Data. If the USSTRATCOM/OP24 receives a degraded or incomplete SOI signature and requests retransmission of the SOI data (by voice or message), resend the data as soon as possible using IMMEDIATE precedence. Sites will retransmit any requested data up to 30 days old.

Table 3.3. (S) SOI Response Time Requirements. (U)

	(b)(1) USSC	(b)(1) USSC	(b)(1) USSC
(b)(1) USSC	(b)(1) USSC	(b)(1) USSC	(b)(1) USSC
(b)(1) USSC	(b)(1) USSC	(b)(1) USSC	(b)(1) USSC

3.5. (U) SOI Signature (SOISIG) Message. This message provides the USSTRATCOM/OP24 with a signature or image of a particular object.

3.5.1. (U) Report Requirements. Details are in **Chapter 4** through **Chapter 10** for when SOISIG messages are required for each type of space event.

3.5.2. (U) Report Format. Each site type (radar, photometric, optical image, and wideband) has its own basic format for this message; see the IWSD database for details. The amount of data sent depends on the data collection rate. If the collection rate is less than 50 data points per second, send every data point. If the collection rate is between 50 and 200 points per second, send every fifth data point. If the collection rate is greater than 200 points per second, send every tenth data point.

3.5.3. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

3.6. (U) SOI Records (SOI-manned sites only). Keep the following documents:

3.6.1. (U) SOI Pass Schedule. The current list of SOI tasking (including all objects tasked, tasking category/suffix, and pass times), and the amount of tasking fulfilled.

3.6.2. (U) SOI Activity Log. A day-by-day log of significant space activities, such as:

3.6.2.1. (U) New launches.

3.6.2.2. (U) Significant space events (such as maneuvers).

3.6.2.3. (U) Special SOI tasking requirements.

3.6.2.4. (U) Equipment status.

3.6.2.5. (U) Reports pending.

3.6.3. (U) Magnetic Media Recordings. Maintain SOI signature data of routine and special interest on magnetic media.

3.6.4. (U) Historical Signature Catalog. Maintain representative signatures of all known foreign mission classes (except fragments of less than 1 meter in RCS) for their historical value and as a means of comparative analysis. The site SOI analyst or technician will decide which tracks to keep in this catalog. The tracks should reflect significant analysis characteristics and any changes in motion. Keep the associated radar hard copy data with the tracks. Annotate each track to show the object number and the date that the track was taken.

3.6.5. (U) SOI Training and Analysis Catalog. A compilation of representative signatures to supplement the formal SOI signature documentation. This should include signatures of foreign and domestic payloads for the first four passes of each orbital system.

3.6.6. (U) SOI Message Log. An unclassified log of all outgoing SOI messages except signature messages. It shows the date-time group, the subject line of the message, and the releaser's initials. (Start message numbers with 0001 at the beginning of the calendar year and continue consecutively through 9999. If a message number is inadvertently skipped, do not pick it up at a later time.)

3.7. (U) Sites Without SOI Personnel. Maintain SOI data on magnetic media along with the following information:

3.7.1. (U) Task and object number.

3.7.2. (U) Time.

3.7.3. (U) Successful or not successful.

3.7.4. (U) Whether or not the signature/wideband images was transmitted.

3.8. (U) Disposition of SOI Data. Sites dispose of locally-held data when no longer required, as follows:

3.8.1. (U) Radar Data. Destroy data after 30 days or when no longer needed.

3.8.2. (U) Optical Data. Destroy after 30 days or when no longer needed.

3.8.3. (U) Orbital Element Sets. Replace with updated element set transmitted from the SCC. Delete element sets permanently after the object has decayed.

3.8.4. (U) SOI Data.

3.8.4.1. (U) SOI signature/wideband images data. Retain for a minimum of 30 days then destroy if no longer needed.

3.8.4.2. (U) SOI discrimination data. Retain for a minimum of 30 days then destroy if no longer needed.

3.8.4.3. (U) Other SOI-related records. Computer printouts of satellite track data, mission planning logs, positional checklists, etc. may be destroyed when superseded, or when no longer needed by the site.

3.8.5. (U) SOI Logbooks.

3.8.5.1. (U) SOI Activity Log. Retain at least 1 year after last entry in the log.

3.8.5.2. (U) SOI Message Log. Retain until no longer needed by the site.

Chapter 4

NEW FOREIGN LAUNCH (NFL) PROCESSING (U)

4.1. (U) General. A NFL is defined as an Earth Satellite Vehicle (ESV) launched from a foreign country or agency that has not been coordinated with USSTRATCOM.

(U) Section A – Initial Notifications.

4.2. ~~(S)~~ General. (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.3. (U) Period of Interest (POI).

4.3.1. (U) SCC POI Implementation Actions.

4.3.1.1. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.3.1.2. (S) (b)(1) USSC
(b)(1) USSC

4.3.2. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.3.3. (S) (b)(1) USSC
(b)(1) USSC

4.4. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.4.1. (S) (b)(1) USSC
(b)(1) USSC

4.4.2. (S) (b)(1) USSC
(b)(1) USSC

4.4.3. (S) (b)(1) USSC
(b)(1) USSC

4.4.4. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.5. (U) SCC ANCHOR Alert Actions.

4.5.1. (S) (b)(1) USSC
(b)(1) USSC

4.5.1.1. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.5.1.2. (S) (b)(1) USSC

4.5.1.3. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.5.1.4. (S) (b)(1) USSC
(b)(1) USSC

4.5.1.5. (S) (b)(1) USSC
(b)(1) USSC

4.5.1.6. (S) (b)(1) USSC
(b)(1) USSC

4.5.2. (U) ANCHOR Alerting Termination. The SCC will closely monitor the situation and ensure ANCHOR Alerts are terminated when no longer warranted. Notify sites by secure voice or via ANCHOR Alerting Termination message (SU80) notifying sites that the ANCHOR Alert is terminated. See **Attachment 5** for message headers.

4.6. (U) Site Response ANCHOR Alert Actions.

4.6.1. (S) (b)(1) USSC
(b)(1) USSC

4.6.2. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.6.3. (S) (b)(1) USSC
(b)(1) USSC

4.6.4. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.6.5. (U) Voice Report. Call the SCC immediately using the UCT voice report format if objects correlate to the ANCHOR Alert. See **Attachment 4** for voice format. Optical sites will consider all UCTs acquired while searching on a flash ELSET as critical. The critical UCT criteria are described in **Chapter 12**.

4.6.6. (S) (b)(1) USSC
(b)(1) USSC

4.6.7. (U) Data Transmission.

4.6.7.1. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.6.7.2. (S) (b)(1) USSC
(b)(1) USSC

4.6.8. (U) ANCHOR Termination. Stop ANCHOR Alerts when directed as follows:

4.6.8.1. (S) (b)(1) USSC
(b)(1) USSC

4.6.8.2. (S) (b)(1) USSC
(b)(1) USSC

4.6.8.3. (S) (b)(1) USSC

4.6.8.4. (S) (b)(1) USSC
(b)(1) USSC

(U) Section B - NFL Processing.

4.7. ~~(S)~~ General. (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.8. (U) Historic NFLS. Historic NFLs are processed by determining which launch folder the event most closely correlates to and tasking sites to track on that folder (see paragraph **4.8.2.2.** for criteria). Launch folders name sites, predict what time (in terms of minutes after launch) those sites should acquire the event at coverage entry, and list the maximum elevation at which the associated piece(s) should pass over that site. For Launch Folder Numbering Convention, see **Attachment 6.**

4.8.1. (U) SCC Actions.

4.8.1.1. (S) (b)(1) USSC (b)(1) USSC (b)(1) USSC

4.8.1.2. (U) Launch Notification Message. Transmit a Possible Foreign Launch (historic) message (SU69) to task the SSN to track on the designated folder(s). See **Attachment 5** for message headers.

4.8.2. (U) Site Actions.

4.8.2.1. (U) Site Search in accordance with established historic launch criteria. Folder alerts are CAT 1 tasking.

4.8.2.1.1. (U) Near Earth.

4.8.2.1.1.1. (U) Near Earth is a satellite with a period of less than 225 minutes.

4.8.2.1.1.2. (S) (b)(1) USSC (b)(1) USSC (b)(1) USSC

4.8.2.1.2. (U) Deep Space satellite is an object with a period equal to or greater than 225 minutes. Some common deep space orbits can be defined as follows:

4.8.2.1.2.1. (U) Semi-synchronous is a satellite with a period roughly between 500 and 1100 minutes.

4.8.2.1.2.2. (U) Geosynchronous is a satellite with a period roughly between 1100 and 1800 minutes.

4.8.2.1.2.3. (U) A multiday orbit is a satellite with a period roughly greater than 1800 minutes.

4.8.2.1.2.4. (S) (b)(1) USSC (b)(1) USSC (b)(1) USSC

4.8.2.2. (U) Site Folder Correlation. To correlate the object with the folder, the following criteria apply:

4.8.2.2.1. (U) Historic Near-Earth Launch - the difference between actual and folder parameters is less than + / - 5 minutes in period or less than + / - one degree in inclination.

4.8.2.2.2. (U) Historic Semi-Synchronous Launch - the difference between actual and folder parameters is less than + / - 10 minutes in period or less than + / - two degrees in inclination.

4.8.2.2.3. (U) Historic Geosynchronous Launch - the difference between actual and folder parameters is less than + / - 20 minutes in period or less than + / - two degrees in inclination.

4.8.2.3. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.8.2.4. (U) Data Transmission.

4.8.2.4.1. (S) (b)(1) USSC
(b)(1) USSC

4.8.2.4.2. (S) (b)(1) USSC
(b)(1) USSC

4.9. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.9.1. (U) SCC Actions.

4.9.1.1. (U) Search Tasking Plan. Create a site search-tasking plan based on all available information. See paragraph **2.11.** for description of search tasking plans.

4.9.1.2. (U) Analyst Satellite Tasking. Create and task an analyst satellite as required to supplement the search-tasking plan. An analyst satellite is an ELSET created by orbital analysts used internally or externally to process or analyze potential objects (built off actual observations or best estimation of position). See **Attachment 3** for appropriate Analyst Satellite numbering scheme.

4.9.1.3. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.9.1.4. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.9.2. (U) Site Actions.

4.9.2.1. (U) Search.

4.9.2.1.1. (U) Attempt to track on the search-tasking plan and/or on analyst satellites when they become available. Always search on the most current tasking (search tasking plan over ANCHOR Alert, analyst satellite over search tasking plan).

4.9.2.1.2. (U) The first sensor to track objects in transfer or final orbit is required to collect sufficient observations to generate an ELSET on each piece.

4.9.2.2. (U) Voice Report. Report both positive and negative acquisitions on each pass of a search plan or analyst satellite to the SCC within 5 minutes after end of track. Use the following procedures:

4.9.2.2.1. (U) Pass POS acquisition using the Critical UCT Voice Report Format described in **Attachment 4**.

4.9.2.2.2. (U) Pass NEG acquisition using the POS/NEG Voice Report Format described in **Attachment 4** using secure voice. Space-based systems report to the SCC within 20 minutes of negative acquisition from first attempt to track. Prepare a Miss Report message (SA19) if directed by the SCC. See **Attachment 2** for report format.

4.9.2.3. (U) Data Transmission.

4.9.2.3.1. (U) Send observations and ELSETs at IMMEDIATE precedence or at FLASH precedence if directed by the SCC analyst. Space-based systems report to the SCC within 20 minutes of negative acquisition from first attempt to track.

4.9.2.3.2. (U) Transmit SOI at IMMEDIATE precedence (unless otherwise directed) to USSTRATCOM/OP24 within 5 minutes after end of track. Space-based systems report to the SCC within 30 minutes of negative acquisition from first attempt to track.

4.9.3. (U) Site Actions before ELSET 1.

4.9.3.1. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

4.9.3.1.1. (S) (b)(1) USSC

4.9.3.1.2. (S) (b)(1) USSC

4.9.3.2. (U) FLASH ELSET Acquisition Priority. When a site receives a FLASH ELSET from another site but has not received ELSET 1 or instructions from the SCC, attempt acquisition with the following priority:

4.9.3.2.1. (U) First - Analyst satellites created and specifically tasked to a site for track by the SCC.

4.9.3.2.2. (U) Second - Folders directed by the SCC.

4.9.3.2.3. (U) Third - Most recent FLASH ELSET received at the site (from another site).

4.9.3.3. (U) When tracking under ANCHOR FLASH requirements, do not use a FLASH ELSET transmitted from another site without prior SCC approval.

4.9.4. (U) Additional Actions for Deep Space NFLs. If the launch is to deep space, the first sensor to track objects in transfer or final orbit is required to collect sufficient observations to generate an ELSET on each piece. In addition, use the following procedures to help acquire the payload(s) and related pieces.

4.9.4.1. (U) Use FLASH ELSETs from other sites to attempt object acquisition.

4.9.4.2. (U) Generate ELSETs on all UCTs acquired while searching for a new deep space launch.

4.9.4.3. (U) Send ELSETs and observations to the SCC.

(U) Section C – Post-Launch Procedures.

4.10. (U) General. Whether an NFL is historic or non-historic, once a site successfully tracks the object the following procedures apply.

4.11. (U) SCC Actions.

4.11.1. (U) Observation Processing. Process metric observations received from sites to determine the new space object's orbit. Generate and task on analyst satellites if necessary to help sites acquire the object(s), especially if the launch is to deep space.

4.11.2. (U) ELSET 1 Publication. Publish ELSET 1 on the primary payload(s) when the following criteria are met.

4.11.2.1. (U) Near-Earth Criteria.

4.11.2.1.1. (U) Tracks from any three sites, OR

4.11.2.1.2. (U) Tracks from two sites at least one-half revolution apart, OR

4.11.2.1.3. (U) Tracks from one site on separate revolutions. **NOTE:** A "track" is one or more observations of the same object collected by the same sensor during one time period while the object is in view. Observations from different faces of the same phased array site are considered a single track.

4.11.2.2. (U) Deep Space Criteria.

4.11.2.2.1. (U) Any three tracks which define more than 30 degrees of an orbit with at least one radar track, OR

4.11.2.2.2. (U) Any three tracks defining 60 degrees of the orbit, if only optical sites are available. (When possible, use tracks from more than one site.)

4.11.3. (U) ELSET 1 Generation Criteria Waiver.

4.11.3.1. (U) If, in the judgment of the SCC Crew Commander, sufficient observations have been received for creation of an accurate element set, the crew commander may waive the above criteria. If the ELSET 1 publishing criteria above have been met, but some of the observations are considered unreliable, the crew commander may require additional observations to be taken before creation of ELSET 1. In either case, fully document all decisions.

4.11.3.2. (U) A Deep Space criterion is automatically waived for objects that inject into hyperbolic trajectories within one revolution, or are untrackable due to their orbital height.

4.11.4. (U) ELSET 1 Publication Time Requirement. The SCC will transmit ELSET 1 on the primary payload(s) within 30 minutes of receipt of the last necessary observations to meet the criteria. Transmit the ELSET One Publication message (SU73) notifying all sites that ELSET 1 has been sent. **NOTE:** Deep space launches seen 30-45 minutes after launch are most likely in the transfer orbit. Final orbit of the payload may not be achieved for hours or days.

4.11.5. (U) Cataloging. Transmit a Satellite Catalog message (SU54) listing the new SCC and International Designator numbers and the common name.

4.12. (U) Site Actions After ELSET 1.

4.12.1. (U) Metric Observations. Immediately after launch, take observations on all objects associated with the NFL using the automatic tasking requirements listed in **Table 4.1.** Automatic tasking requirements will remain in effect until superseded by a Sensor Tasking message or verbal tasking.

4.12.2. (U) Receipt of ELSET 1.

4.12.2.1. (U) When ELSET 1 is received, cancel folder alerts, search tasking plans, and/or searches for 8XXXX analyst satellites previously issued for that specific NFL event. Refer to **Table 4.1.** for post ELSET 1 tasking requirements.

4.12.2.2. (U) After receipt of ELSET 1, report the results of each pass to the SCC until 48 hours after launch. Use POS/NEG voice reporting if applicable according to **Attachment 4**.

4.12.3. (U) SOI Data Collection and Reporting. Collect SOI data according to the automatic tasking requirements in **Table 4.2.** below and forward the data to USSTRATCOM/OP24 as indicated. See paragraph **3.4.** for detailed SOISIG report requirements. Transmit signature and discrimination data to USSTRATCOM/OP24 on all critical UCTs.

4.12.4. (U) Exceptions for Optical Sites. Fulfill all deep space SOI tasking and message requirement. Contact USSTRATCOM/OP24 to request termination of tasking requirements under following conditions:

4.12.4.1. (U) If unable to acquire a payload(s) or rocket body after attempts during five observation periods without weather impact.

4.12.4.2. (U) If unable to acquire significant fragments after attempts during three observation periods without weather impact.

4.12.4.3. (U) If unable to acquire data on a geosynchronous satellite due to site limitations.

Table 4.1. (U) Automatic Metric Tasking Requirements for New Foreign Launch. (U)

NEAR EARTH

SITE	PRIOR TO ELSET 1	ELSET 1 TO 24 HRS	24-48 HRS AFTER L/O	AFTER 48 HRS
ASC, KAE	P/L - 1A R/B - 2B Deb - 2B	P/L - 1B R/B - 2B Deb - 2B	P/L - 2B R/B - 3C Deb - 3C	P/L - 2C R/B - 3C Deb - 3C
BLE, CAV, COD, EGL, FYL, GB2, SHY, THL, CLR	P/L - 1A R/B - 2B Deb - 2B	P/L - 1B R/B - 2B Deb - 2B	P/L - 2B R/B - 3C Deb - 3C	P/L - 2C R/B - 3C Deb - None
ALT, TRADEX, MMW	P/L - 1A R/B - None Deb - None	P/L – 1B R/B - None Deb - None	None	None
NAV	1	1	2	As Directed
MSSS	1A	2B	2B	As Directed

DEEP SPACE

SITE	PRIOR TO ELSET 1	**ELSET 1 TO 24 HRS**	**24-48 HRS AFTER L/O**	**AFTER 48 HRS**
GB2, DGC, EGL, ALT, MAU, MIL, MSSS, MOSS, SOC	P/L - 1S R/B – 1S Deb - 2S	P/L – 1S R/B – 1S Deb - 2D	P/L – 1S R/B – 2D Deb - N/A	As Directed
(P/L = Payload, R/B = Rocket body, Deb = Debris)				

Table 4.2. ~~(S)~~ Automatic SOI Tasking Requirements For New Foreign Launch. (U)

SITE TYPE	TIME PERIOD REPORTS	TASKING	NUMBER OF SOISIG
(b)(1) USSC	(b)(1) USSC	(b)(1) USSC	(b)(1) USSC
(b)(1) USSC			
(b)(1) USSC			

(U) Section D – Theater Space Launch Reporting (SLR).

4.13. ~~(S)~~ General. (b)(1) USSC

(b)(1) USSC

4.14. (U) SLR Responsibilities.

4.14.1. (S) (b)(1) USSC

(b)(1) USSC

4.14.2. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

4.14.3. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

Chapter 5

ANTI-SATELLITE LAUNCH PROCESSING (U)

5.1. ~~(S)~~ General.

(b)(1) USSC

(b)(1) USSC

(b)(1) USSC

5.2. (S)

(b)(1) USSC

(b)(1) USSC

(b)(1) USSC

5.2.1. (S)

(b)(1) USSC

(b)(1) USSC

(b)(1) USSC

5.2.2. (S)

(b)(1) USSC

(b)(1) USSC

(b)(1) USSC

5.2.3. (S)

(b)(1) USSC

(b)(1) USSC

(b)(1) USSC

5.2.4. (S)

(b)(1) USSC

(b)(1) USSC

5.2.5. (S)

(b)(1) USSC

(b)(1) USSC

5.3. (S)

(b)(1) USSC

(b)(1) USSC

(b)(1) USSC

5.4. (U) SCC Actions.

5.4.1. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

5.4.2. (U) Tasking.

5.4.2.1. (S) (b)(1) USSC
(b)(1) USSC

5.4.2.2. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

5.4.2.3. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

5.4.2.4. (S) (b)(1) USSC
(b)(1) USSC

5.4.3. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

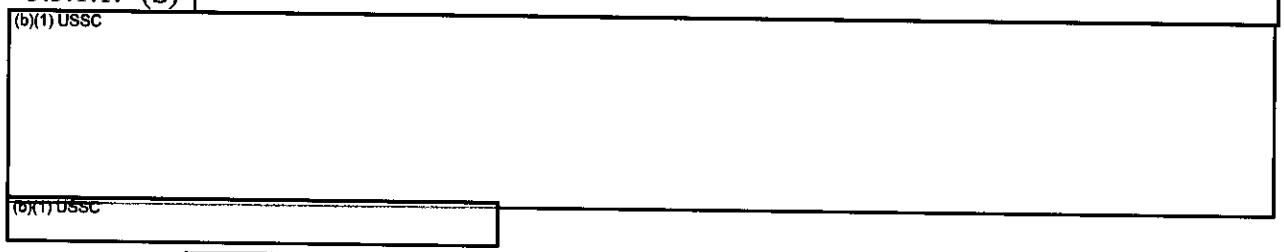
5.4.4. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

5.4.5. (U) Event Termination. Upon completion of the event, send the Anchor Alerting Termination message (SU80) and an Analyst Satellite Catalog message (MU91) to all tasked sites. Send the Sensor Tasking Update message (SU67) to return tasking requirements on the target satellite(s) to normal, if desired at this time.

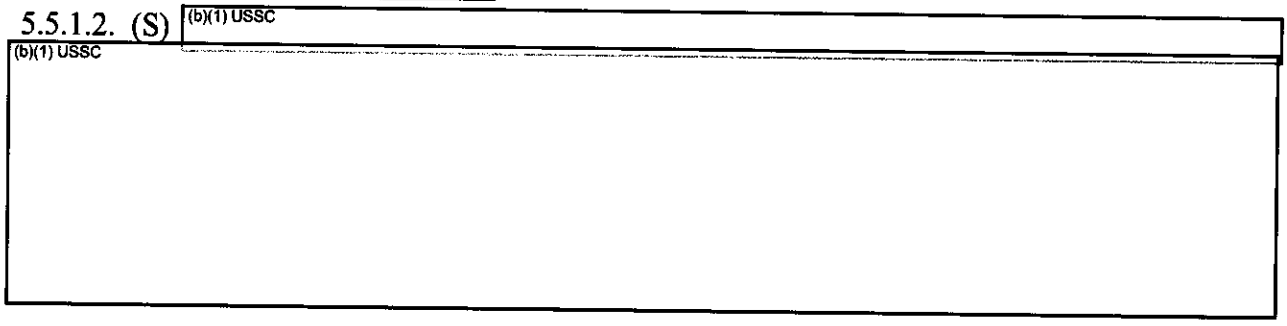
5.5. (U) Site Actions.

5.5.1. (U) Search.

5.5.1.1. (S) (b)(1) USSC



5.5.1.2. (S) (b)(1) USSC



5.5.1.3. (U) Use FLASH ELSET from other sites only when specifically directed to do so by the SCC.

5.5.2. (U) Voice Reporting. Report both positive and negative acquisitions on each pass of a search plan or analyst satellite to the SCC within 5 minutes after end of track. Use the following procedures:

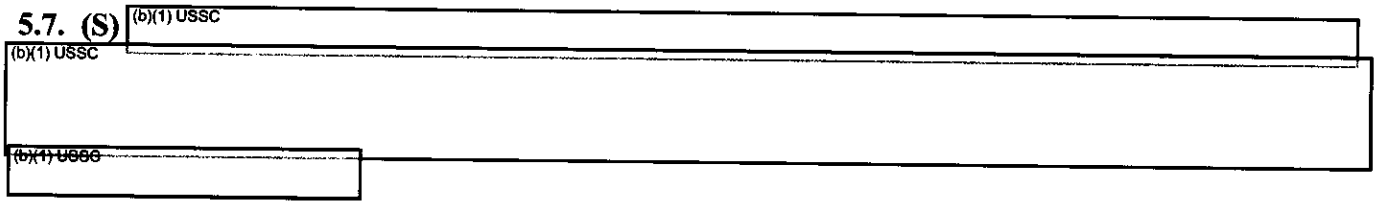
5.5.2.1. (U) Pass POS acquisition using the Critical UCT Voice Report Format described in **Attachment 4**.

5.5.2.2. (U) Pass NEG acquisition using the POS/NEG Voice Report Format described in **Attachment 4** using secure voice. Space-based systems report to the SCC within 20 minutes of negative acquisition from first attempt to track. Prepare a Miss Report message (SA19) if directed by the SCC. See **Attachment 2** for report format.

5.5.3. (U) Data Transmission. Transmit FLASH ELSETs only when specifically directed by the SCC.

5.6. (U) Event Termination. Delete analyst satellites from site databases and return to normal operations only when directed by the SCC.

5.7. (S) (b)(1) USSC



Chapter 6

PRE-PLANNED LAUNCH PROCESSING (U)

6.1. (U) General. A Pre-Planned Launch (PPL) is one for which USSTRATCOM has received advance information from the launching agency or payload(s) owner about the payload(s) mission, launch profile, and orbital parameters. The procedures used to acquire and track NFLs are not needed. There are two types of PPLs:

6.1.1. (U) Cooperative Launch. A PPL originating outside the U.S. with prior notification to USSTRATCOM.

6.1.2. (U) Domestic Launch. A PPL originating in the U.S. or from a U.S. platform.

(U) Section A – Initial Notification of Launch.

6.2. (U) General. Approximately 15 days before launch, a Department of Defense (DoD) launching agency will send information of an upcoming launch in the form of a "Ready minus 15 days" (R-15) message or a Vehicle Information Message (VIM). On some commercial launches the 1st Space Control Squadron (1 SPCS) /Launch Officer (LO) will get commercial messages describing the launch from the company. For Shuttle launches, the National Aeronautics and Space Administration (NASA) sends a "Datapack" message. These messages are sent to 1 SPCS/LO providing launch agency and/or satellite owner requirements for surveillance support. For more information see reference (e).

6.3. (U) CMOC/J3 and 1SPCS Responsibilities.

6.3.1. (U) Initial Launch Alert Message (ILAM). An ILAM message (SU51) is coordinated through 1 SPCS and sent by 1 SPCS to the SSN, based on data from the R-15/VIM, about an upcoming pre-planned launch. It details the predicted launch date and windows, nominal ELSET numbers, predicted schedule of events, object descriptions, tasking requirements and cataloging instructions.

6.3.2. (U) Pre-Planned Launch Folder (PPLF). The 1 SPCS/Launch Officer (LO) prepares the PPLF for the SCC crew that contains information about an upcoming PPL. CMOC/J3SX (Combat Analysis) is responsible for preparing PPLFs for exclusion list launches (see **Chapter 13** for guidance).

6.3.3. (U) Nominals.

6.3.3.1. (U) 1 SPCS will generate nominal ELSETs and send them to all SSN sites that will track them. These element sets, derived from information in the R-15, describe each orbit segment in a PPL and are included in the ILAM package.

6.3.3.2. (U) The number "7XX00" is the generic folder designation for a given launch. Each nominal ELSET is assigned five-digit numbers in the range from 70000 to 74999 (as shown in **Attachment 3**). The ELSET identifier is in the format 7XXYY, where XX indicates a particular pre-planned launch, and YY denotes a particular element set for that launch.

6.4. (U) SCC Actions.

6.4.1. (U) ILAM Addendum. After the original ILAM is transmitted, the SCC crew may receive updates to the scheduled launch time from various sources. Notify the SSN sites of updates or changes to information in a previous ILAM by transmitting an Initial Launch Alert Addendum message (SU53) containing the updated information.

6.4.2. (U) T-3 Message. When the launch countdown reaches 3 hours before liftoff, the SCC will contact the range to confirm launch status. Upon confirmation, the SCC will send a Pre-Planned Launch T-3 Hours message (MU17) to the SSN notifying sites of launch imminence. Normally the SCC contacts the range or launch agency point of contact for an update.

(U) Section B – Pending Launch Actions.

6.5. (U) General. The Launch Correlation Unit (LCU) fulfills USSTRATCOM's responsibilities to the Joint Chiefs of Staff (JCS) for the reference (f). Part of the primary mission is to ensure missile warning and space surveillance sites are tasked to track errant launch vehicles. This agreement calls for the U.S. and the Commonwealth of Independent States (CIS) to notify each other of space and missile launches which might appear as a threat to the national territory of either country. The LCU collects, consolidates, and provides the National Military Command Center (NMCC) information about all scheduled domestic military and civilian space and missile launches.

6.6. (U) LCU Conference. The LCU Conference is a telephonic conference for a domestic launch controlled by the LCU between the domestic launching agency, NMCC, the CCC, SCC, and other parties. This conference is used by the LCU Duty Officer (LCUDO) to ensure that all centers requiring up-to-the-minute details on domestic launches get that information in real-time. The LCU Conference monitors the liftoff stage of a launch.

6.6.1. (U) LCU Duty Officer (LCUDO). The LCUDO is an LCU-trained, qualified Missile Warning Technician (MWT) on the MWC crew. The LCUDO establishes and controls the LCU Conference and obtains new trajectory data or predicted impact points from the Range Control Officer on non-nominal or errant launches. The LCUDO determines reportability on all errant reportable missiles or space boosters that **DO NOT** achieve orbit and pass all pertinent information to the CCC and the NMCC.

6.6.2. (U) Conference Initiation. The Missile Warning Center is responsible to initiate the LCU Conference. The LCUDO will ensure all conferees are on the line and direct all communications with the Range Control Officer (RCO) at the launch site.

6.6.3. (U) LCU Conferees. The LCU conference is initiated not later than 30 minutes before the scheduled launch time for all pre-planned Domestic and some Cooperative launches. The LCU includes at least the following members: Aerospace Control Officer (ACO) or RCO, NMCC, CMOC Consolidated Command Center (CMOC/CCC), USSTRATCOM, and the SCC.

6.6.4. (U) Countdown.

6.6.4.1. (U) At 15 minutes before liftoff, the LCUDO will contact the operator and have them add CMOC/CCC, Federal Emergency Management Agency (FEMA), and USSTRATCOM to the LCU conference. The CCC adds NMCC. NMCC will add their additional conferees at this point.

6.6.4.2. (U) At 5 minutes before the launch (or when all conferees have been added), the LCUDO will perform a roll call of all conferees, including those added by NMCC and request a status briefing from the ACO (Eastern Range) or RCO (Western Range). Then the LCUDO will notify the applicable missile warning site(s) of impending launch via secure means. **NOTE:** The LCUDO will NOT stop the launch just because conferees are not on the conference.

(U) Section C – Launch Processing.

6.7. (U) Liftoff Message. When the launching agency reports "first motion time" (liftoff on the LCU Conference), send a Pre-Planned Launch Liftoff Notification message (MU19) giving the first motion time to all ILAM addressees. This allows sites to determine coverage entry of the new launch, based on the nominal ELSETs and updates the nominals to actual liftoff time.

6.8. (U) Cooperative Launch Liftoff. For a cooperative launch, an LCU conference is not normally held, therefore the SCC may not know if the liftoff is nominal, non-nominal or errant. If intelligence or the launch agency indicates that the object did not achieve orbit, send a Pre-Planned Launch Failure message (MU21) to the SSN describing the situation and terminate processing. If indications are that the payload(s) did achieve orbit, but it is not being tracked by the SSN according to the PPLF, develop a site search plan. If initial tracking by the SSN or intelligence sources indicate it is in a non-nominal orbit, process it according to the criteria in paragraph **4.9.**

6.9. (U) Domestic Launch Liftoffs. There are three types of liftoffs:

6.9.1. (U) Nominal Liftoff ("Launch Agency Nominal"). When a domestic launch vehicle achieves its planned liftoff parameters (during powered flight), as determined by the launching agency it is a Nominal Liftoff. LCU will terminate the LCU conference once the liftoff is declared nominal and continue to process the launch as planned in the PPLF.

6.9.2. (U) Non-Nominal Liftoff ("Launch Agency Non-Nominal"). When a domestic launch vehicle does not achieve its planned liftoff parameters and its predicted impact point remains within range destruct lines and it can be safely destroyed if required it is a Non-Nominal Launch. Send a Pre-Planned Launch Failure message (MU21) to the SSN if the liftoff is declared non-nominal and is destroyed, ("7XX00 failed to achieve orbit. No designation will be made for this launch"). LCU will terminate LCU Conference and launch processing.

6.9.3. (U) Errant Liftoff ("Launch Agency Errant") Processing. When a domestic launch vehicle does not achieve its planned liftoff parameters, cannot be confirmed destroyed, and its predicted impact point can reasonably be assumed to be outside range destruct lines it is an Errant Liftoff. Monitor trajectory to determine if launch goes orbital. The LCU will determine reportability and report this over the LCU Conference as well as the "OPS Loop". The LCU will report the location and time at which it went errant, as well as the vehicle's new azimuth.

6.9.3.1. (U) Errant Lift-Off – REPORTABLE. When a domestic space launch vehicle has an errant liftoff, achieves orbit, AND may impact, overfly, or come within 100 nautical miles of the Former Soviet Union (FSU) land mass (or could otherwise be perceived as a threat to the FSU) it is an OPREP (Operational Report)-3 PINNACLE reportable Space Launch. The SCC is responsible for Reportable Errant Missile launches that achieve orbit and Reportable Space Launches. (The MWC is responsible for reportable missile launches and space boosters that fail to achieve orbit.)

6.9.3.2. (U) Errant Lift-Off – NON-REPORTABLE. When a domestic space launch vehicle has an errant liftoff and achieves orbit, but its ground trace does not meet the criteria of a reportable space launch it is a Non-Reportable Space Launch and requires an OPREP-3 PINNACLE.

6.9.3.3. (U) In the event of an errant lift-off, the LCUDO will terminate the LCU Conference. MD will initiate a Significant Event Conference (SEC) IAW reference (g).

6.9.3.4. (U) The LCU will pass the Voice OPREP-3 PINNACLE as rapidly as possible, but within 15 minutes of determination that the event is OPREP-3 PINNACLE reportable. Transmit the hardcopy OPREP-3 PINNACLE within 1 hour after the voice transmission. (See **Attachment 8** for procedures.)

6.10. (U) SCC Actions for Errant Launch.

6.10.1. (U) Search Tasking Plan. Create a site search-tasking plan based on all available information. See paragraph **2.11.** for description of search tasking plans.

6.10.2. (U) Analyst Satellite Tasking. Create and task an analyst satellite as required to supplement the search-tasking plan. See **Attachment 3** for appropriate analyst satellite numbering scheme.

6.10.3. (U) Launch Notification. Transmit a Sensor Search Message (SU57) to the sites giving all available information about the launch.

6.11. (U) Site Actions for Errant Launches.

6.11.1. (U) Search. Attempt to track on the search-tasking plan and/or on analyst satellites when they become available. Always search on the most current tasking.

6.11.2. (U) Voice Report. Report both POS and NEG acquisitions on each pass of a search plan or analyst satellite to the SCC within 5 minutes after end of track. Use the following procedures:

6.11.2.1. (U) Pass POS acquisition using the Critical UCT Voice Report Format described in **Attachment 4**.

6.11.2.2. (U) Pass NEG acquisition using the POS/NEG Voice Report Format described in **Attachment 4** using secure voice. Space-based systems report to the SCC within 20 minutes of negative acquisition from first attempt to track. Prepare a Miss Report message if directed by the SCC. See **Attachment 2** for report format.

6.11.3. (U) Data Transmission. Send observations at IMMEDIATE precedence or at FLASH precedence if directed by the SCC analyst.

6.11.4. (U) SOI Data Collection and Reporting. Collect SOI data according to the automatic tasking requirements in **Table 6.2.** and forward the data to USSTRATCOM/OP24 as indicated. See paragraph **3.4.** for detailed "SOISIG" report requirements. Transmit signature and discrimination data to USSTRATCOM/OP24 on all critical UCTs.

6.11.5. (U) Exceptions for Optical Sites. Fulfill deep space SOI tasking and message requirements except in the following situations: Contact USSTRATCOM/OP24 to request termination of tasking requirements under following conditions:

6.11.5.1. (U) If unable to acquire a payload(s) or rocket body after attempts during five observation periods without weather impact.

6.11.5.2. (U) If unable to acquire significant fragments after attempts during three observation periods without weather impact.

6.11.5.3. (U) If unable to acquire data on a geosynchronous satellite due to site limitations.

(U) Section D – Orbit Processing.

6.12. (U) General. The SCC is responsible for receiving data from the SSN and calculating orbital elements. During PPL processing, this is accomplished with the assistance of an Early Orbit Determination (EODET) (if requested by launching agency or owner/operators) or via Non-EODET processing. An EODET conference is a telephone conference established by the SCC between a domestic launch agency or payload(s) owner/operator and SSN sites tracking at a critical time in the launch profile (payload(s) deployment, boost into a new orbit, etc.). It is used to allow the sites to give instant feedback on the status of the satellite directly to those concerned.

6.13. (U) EODET Processing. During domestic launch processing establishing ELSET 1 and cataloging pieces may be expedited via an EODET conference. The ILAM for each launch specifies whether one or more EODETs are required, which site(s) will be involved, the time for each EODET, and other details.

6.14. (U) EODET Conference. The SCC will establish an EODET conference between the launch agency and applicable sites before the site's scheduled pass and maintain the conference until the SCC/Site can establish the satellite's orbit.

6.14.1. (U) Potential Orbits.

6.14.1.1. (U) A Nominal Orbit ("SCC Nominal") is when any pre-planned launch vehicle achieves orbit and its orbital parameters as compared to the nominal ELSETs provided in the ILAM are within the following parameters:

6.14.1.1.1. (U) Near earth - 5 minutes in period and one degree in inclination.

6.14.1.1.2. (U) Semisynchronous - 10 minutes in period and two degrees in inclination.

6.14.1.1.3. (U) Geosynchronous - 40 minutes in period and two degrees in inclination.

6.14.1.2. (U) Non-Nominal Orbit ("SCC Non-Nominal"). When any pre-planned launch vehicle achieves orbit, but one or more orbital parameters are outside the Nominal Orbit parameters it is a Non-Nominal Orbit. Develop a site search plan and task sites to track the launch in its new orbit. See paragraph **2.11.** for description of search tasking plans.

6.14.2. (U) Site Actions.

6.14.2.1. (U) Metric Observations. EODET tasking is CAT 1A unless notified otherwise by the SCC. At any time prior to the pass, if a site determines possible problems in meeting EODET requirements, immediately notify the SCC.

6.14.2.2. (U) Voice Reports. Make a voice report on the EODET conference. See **Attachment 4** for voice report format.

6.14.2.3. (U) Data Transmission. Upon completion of the pass, send all observations and ELSETs on the EODET track to the SCC and other agencies specified in the ILAM, at IMMEDIATE precedence. Also transmit any SOI data tasked by USSTRATCOM/OP24.

6.15. (U) Non-EODET Processing. For a cooperative launch or a domestic launch where an EODET is not requested, the SCC will not be on an EODET conference, so assume initially that these launches are nominal and process it as planned in the PPLF.

6.15.1. (U) Site Actions.

6.15.1.1. (U) Search. Upon receipt of the Pre-Planned Launch Liftoff Notification (MU19) message from the SCC, set up to track the new launch. If no indications are received from the SCC, assume that it is nominal and follow the ILAM. Track all pieces associated with the launch unless otherwise directed by the SCC.

6.15.1.2. (U) Voice Report. Before receipt of ELSET 1, report all tracks to the SCC using POS/NEG format as described in **Attachment 4**.

6.15.1.3. (U) Metric Observations Tasking. Use the automatic tasking requirements in **Table 6.1.** to collect metric observations. This automatic tasking will remain in effect until superseded by a Sensor Tasking message (SU66).

6.15.2. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

6.15.3. (U) Special Tasking Requirement for Range Radars. During initial tracking of a new launch from the Eastern or Western Range, range radars (Ascension (Eastern) and Kaena Point (Western)) have a primary mission of Range Support. They will collect all possible track data, regardless of SCC tasking. For later acquisitions, these range radars will follow the normal automatic tasking in **Table 6.1.** and the follow-on tasking assigned in the Sensor Tasking (SU66) message.

6.15.4. (U) SOI Data Collection and Reporting. Collect SOI data according to the automatic tasking requirements in **Table 6.2.** Use the vehicle configuration description in the ILAM to discriminate the objects tracked.

Table 6.1. (U) Automatic Metric Tasking for Pre-Planned Launch. (U)

NEAR EARTH			
SITE	PRIOR TO ELSET 1	AFTER ELSET 1	24-48 HRS AFTER L/O
ASC, KAE, KWJ	2B	2B	2B
BLE, CAV, CLR, COD, EGL, FYL, GB2, SHY, THL	2C	2C	2C
NAV	2	2	2
MSSS	2B	2S	None
DEEP SPACE			
SITE	**PRIOR TO ELSET 1**	**AFTER ELSET 1**	**24-48 HRS AFTER L/O**
DGC, GB2, MAU, SOC, KWJ, EGL, MIL, MSSS, MOSS	1S	1S	2U
(P/L = Payload, R/B = Rocket body, Deb = Debris)			
NOTE: Tasking Prior to ELSET 1 applies only to sites tasked in ILAM.			

Table 6.2. (U) Automatic SOI Tasking for Pre-Planned Launch. (U)

SITE TYPE	TIME PERIOD	TASKING	# OF SOISIG REPORTS
RADAR	Liftoff to 24 hours of receipt of ELSET 1 whichever is last	P/L - 2W R/B - 2Y Deb - 2Y	One per object per pass
Optical (DS only)	First pass only	All Pieces - 2W	One per object
(P/L = Payload, R/B = Rocket body, Deb = Debris)			

6.16. (U) Special Space Shuttle Processing.

6.16.1. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

6.16.2. (U) Radar Restrictions. Since the shuttle's normal orbit is relatively low, it can be adversely affected by radar energy generated by powerful SSN sites (particularly Eglin, ALTAIR and Cavalier). Therefore in certain situations, such as during astronaut spacewalks or when extremely sensitive payloads are on board, NASA will request that particular radars restrict their transmissions while the shuttle flies overhead. NASA will send a Radar Restriction message to the SCC and the appropriate sites, listing the effective restriction times and specific instructions for either reducing or entirely stopping radar transmissions. Sites must comply with these restrictions as stated in the message; for clarification or questions, contact the SCC.

6.16.3. (U) Reportable Reentry. If the shuttle will land in the U.S. on a descending node of its orbit rather than the normal ascending node, it will reenter the atmosphere over the Northern Hemisphere, possibly over the FSU landmass. To avoid any misinterpretation of the event, the SCC will make a verbal OPREP-3 PINNACLE report to the MD within 5 minutes of reentry confirmation, giving the predicted reentry time and location as obtained from NASA. The MD will pass the Voice OPREP-3 PINNACLE as rapidly as possible, but within 15 minutes of determination that the event is OPREP-3 PINNACLE reportable. Transmit the hardcopy OPREP-3 PINNACLE within 1 hour after the voice transmission. (See **Attachment 8** for procedures.)

6.17. (U) Cataloging Actions and Publication of ELSET 1. The SCC will receive SSN data, catalog pieces, and publish according to the following criteria:

6.17.1. (U) Nominal Orbit Catalog Criteria. If a domestic or cooperative launch is tracked within nominal orbit parameters, catalog and publish ELSET 1 using the updated nominal ELSET as soon as the following criteria are met:

6.17.1.1. (U) Near Earth - one track in final orbit from any SSN site (unless ILAM specifies otherwise).

6.17.1.2. (U) Deep Space - one track in transfer orbit for deep space objects.

6.17.1.3. (U) Space Shuttle - upon receipt of the Operational Maneuver System (OMS-2) vector from NASA (even before any SSN site has tracked).

6.17.1.4. (U) The SCC crew commander may elect to waive these criteria under the provisions of paragraph **4.11.3.**

6.17.2. (U) Non-Nominal Orbit Catalog Criteria. If a domestic or cooperative launch is tracked in a non-nominal orbit use the standard NFL ELSET 1 criteria to catalog and publish ELSET 1. Transmit the new ELSET within 30 minutes of receipt of the last site's observations needed for ELSET publication.

6.18. (U) Catalog Message. Publish Satellite Catalog message (SU54).

6.19. (U) PPL Process Termination. Once all pieces are cataloged, terminate PPL processing.

Chapter 7

SATELLITE MANEUVERS (U)

7.1. ~~(S)~~ General. (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

7.2. (S) (b)(1) USSC
(b)(1) USSC

7.2.1. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

7.2.2. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

7.3. (U) Site Tracking of Maneuverable Satellites.

7.3.1. (U) Metric Observations. Take metric observations on each maneuverable satellite as tasked in the Sensor Tasking message. If any POS/NEG non-Reentry Assessment (RA) object is tracked meeting the maneuver criteria in paragraph **7.4.**, take all possible observations on the object (not to exceed 30 observations). Call the SCC with a POS/NEG voice report (per **Attachment 4**) and transmit the observations to the SCC within 5 minutes after end of track.

7.3.2. (S) (b)(1) USSC
(b)(1) USSC

7.3.3. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

7.4. (S) (b)(1) USSC
(b)(1) USSC

7.4.1. (S) (b)(1) USSC
(b)(1) USSC

7.4.1.1. (S) (b)(1) USSC

7.4.1.2. (S) (b)(1) USSC
(b)(1) USSC

7.4.1.3. (S) (b)(1) USSC

7.4.2. (S) (b)(1) USSC

7.4.2.1. (S) (b)(1) USSC
(b)(1) USSC

7.4.2.1.1. (S) (b)(1) USSC

7.4.2.1.2. (S) (b)(1) USSC
(b)(1) USSC

7.4.2.1.3. (S) (b)(1) USSC

7.4.2.1.4. (S) (b)(1) USSC
(b)(1) USSC

7.4.2.2. (S) (b)(1) USSC
(b)(1) USSC

7.4.2.2.1. (S) (b)(1) USSC

7.4.2.2.2. (S) (b)(1) USSC
(b)(1) USSC

7.4.2.2.3. (S) (b)(1) USSC

7.4.2.2.4. (S) (b)(1) USSC
(b)(1) USSC

7.5. (U) Maneuver Processing. Upon indications of the maneuver per paragraph **7.4.**, the SCC will immediately transmit a Possible Maneuver (MU61) message to all users.

7.5.1. (U) Site Actions. Upon receipt of the Possible Maneuver (MU61) message, perform the following:

7.5.1.1. (U) Search/Track.

7.5.1.1.1. (U) Near earth satellites.

7.5.1.1.1.1. (S) (b)(1) USSC
(b)(1) USSC

7.5.1.1.1.2. (S) (b)(1) USSC

7.5.1.1.1.3. (S) (b)(1) USSC
(b)(1) USSC

7.5.1.1.2. (U) Deep space satellites.

7.5.1.1.2.1. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

7.5.1.1.2.2. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

7.5.1.2. (U) Reporting and Data Transmission.

7.5.1.2.1. (U) Report each track to the SCC using the POS/NEG voice report format described in **Attachment 4**.

7.5.1.2.2. (U) Collect SOI data as tasked by USSTRATCOM/OP24.

7.5.2. (U) SCC Actions.

7.5.2.1. (U) The SCC will voice task sites as required.

7.5.2.2. (S) (b)(1) USSC

(b)(1) USSC

7.6. (U) Maneuver Termination.

7.6.1. (U) Maneuver Verification Message. Transmit a Maneuver Verification message (MU62) within 30 minutes of the post-maneuver ELSET generation when a maneuver has actually occurred.

7.6.2. (U) Possible Maneuver Cancellation. If, upon receipt of site observations after transmission of a Possible Maneuver message (MU61), the SCC determines that no maneuver occurred, transmit a Possible Maneuver Cancellation message (MU63).

Chapter 8

SATELLITE SEPARATIONS AND DEORBITS (U)

8.1. (U) Separation Defined. A separation is the intentional separation of one or more parts or contents of a satellite from the main body. Certain types of satellites have missions that require the capability to perform separations. Separations are confirmed by intelligence sources and are in most cases followed by a deorbit.

8.2. (S) (b)(1) USSC

8.2.1. (S) (b)(1) USSC

(b)(1) USSC

8.2.2. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

8.3. (U) Initial Indications of Separation.

8.3.1. (U) SCC Indication of Separation. A site normally detects separations while performing routine tracking or when the SCC tasks a site to look for a possible separation. If the SCC has information a separation is going to occur, it should notify all applicable sites with visibility, so they can prepare for the event.

8.3.2. (U) Site Indication of Separation. If any site reports a headcount of greater than one on any object suspected of separating, the SCC will contact OIW for intelligence assessment or confirmation of event. Notify the SCC with a POS/NEG voice report (IAW **Attachment 4**) within 5 minutes of the end of the pass.

8.4. (U) Separation Processing.

8.4.1. (U) Separation Determination. The SCC will determine if the reported multiple headcount could be caused by something other than a separation (i.e., close conjunction between two objects). If a separation is confirmed, keep OIW informed of event and provide support.

8.4.2. (U) Separation Tasking. If a satellite separation is confirmed by intelligence sources, sites will implement the tasking requirements shown in **Table 8.1.** or as directed in the tasking message. Initiate a + / - 10 minute search on the parent object and any associated pieces and/or analyst satellites. Analyst satellites, then associated pieces, will have priority over the parent object if a conflict develops.

Table 8.1. (U) Metric Tasking for Satellite Separations. (U)

NEAR EARTH and DEEP SPACE TASKING		
SITE	PARENT SATELLITE	ASSOCIATED PIECES
ALT, ASC, BLE, CAV, CLR, COD, EGL, FYL, GB2, MIL, SHY, THL	**2D**	2B
NAV	**2**	2

8.4.3. (S) (b)(1) USSC (b)(1) USSC (b)(1) USSC

8.5. (U) Piece Cataloging. If a separation event leaves pieces in orbit, process IAW Post-Launch Procedures as described in paragraph **4.11.**

8.6. (U) Separation Event Termination. Sites will continue to follow the automatic tasking until an updated Sensor Tasking message (SU66) is received.

8.7. (S) (b)(1) USSC (b)(1) USSC

8.8. (U) Deorbitable Satellites.

8.8.1. (S) (b)(1) USSC (b)(1) USSC (b)(1) USSC

8.8.2. (S) (b)(1) USSC (b)(1) USSC

8.9. (S) (b)(1) USSC (b)(1) USSC

8.9.1. (S) (b)(1) USSC (b)(1) USSC

8.9.2. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

Table 8.2. (S) Automatic SOI Tasking for Satellite Deorbit. (U)

SITE TYPE	TIME PERIOD	TASKING	NUMBER OF SOISIG REPORTS
(b)(1) USSC	(b)(1) USSC	(b)(1) USSC	(b)(1) USSC (b)(1) USSC

8.10. (S) (b)(1) USSC

(b)(1) USSC

Chapter 9

REENTRY ASSESSMENTS AND NORMAL DECAYS (U)

9.1. (U) General. The earth's atmosphere affects objects in low-earth orbit by applying a drag force that shortens its orbit lifetime. The amount of drag depends on the atmosphere's density, the shape and size of the spacecraft, the orientation of the object, and speed and shape of the object's orbit. This drag force, unless intentionally counteracted (boost applied), will eventually cause objects to enter the atmosphere.

9.1.1. (U) Program Rationale. Objects surviving reentry could generate false indications of a missile threat to U.S. or CIS missile warning systems. The RA program predicts atmospheric reentry times for decaying objects and provides notification to the NMCC in support of reference (h).

9.1.2. (U) Categories.

9.1.2.1. (U) Reentry Assessment (RA) Objects.

9.1.2.1.1. (U) RA objects are portions of large or dense objects that may survive reentry through the atmosphere and impact the earth. A RA object is any payload(s), rocket body, or platform; OR a piece of debris with a RCS of 1 square meter or greater as measured by Eglin or a comparable ultra high frequency (UHF) radar. These objects are processed under the RA program because they have a probability of surviving reentry into the Earth's atmosphere. Debris smaller than 1 square meter in RCS may be processed as RA objects at the discretion of the SCC depending of the probability of reentry survival.

9.1.2.1.2. (U) High Interest Objects. Objects posing unusual risks to people and property on Earth. High interest objects contain hazardous (e.g., radioactive) materials or human remains, historically survive reentry, generate media interest, RCS of 10 square meters or greater or are deemed high interest by competent authority.

9.1.2.2. (U) Normal Decay Objects. Normal decay objects are debris with an RCS of less than 1 square meter that are not expected to survive reentry through the atmosphere and impact the earth.

9.2. (U) Initial Indications. The SCC determines which objects will decay within 30 days and whether they are RAs or normal decays. 1 SPCS reviews the Tracking and Impact Prediction (TIP) 60-Day Decay Message (SU59) which is produced weekly. Use special perturbations methods, when possible, to make RA decay predictions.

9.3. (U) SCC Initiation of RA Processing.

9.3.1. (U) The SCC initiates RA processing for on-orbit objects up to 7 days before the predicted decay date. The SCC directs increased tasking on objects selected for RA processing. (Normally, 2B tasking is required, although the SCC may adjust tasking.) The SCC sends appropriate tasking in the Sensor Tasking message (SU66). Normal decay tasking remains IAW Sensor Tasking message.

9.3.2. (U) Pieces from new launches may require RA initiation immediately because some decay within several hours or days after launch.

9.4. (U) SCC RA Processing. The SCC updates the GP and SP catalog for the reentering object once per day. The SCC will then update reentry predictions. Four days prior to RA predicted decay the SCC will publish the first TIP Alert message and accomplish RA runs once per shift.

9.4.1. (U) High Eccentricity (High-E) Decays. The SCC updates High-E decays twice every shift. A High-E decay is an object, meeting either RA or normal decay criteria, which has a high eccentricity, as defined below, (making its decay time and location especially difficult to predict). The SCC uses special perturbations methods, when possible, to make RA decay predictions. The SCC indicated High-E tasking in the Sensor Tasking message (SU66).

9.4.1.1. (U) A near earth High-E is any near earth object with an eccentricity greater than 0.1 and a perigee less than 250 km.

9.4.1.2. (U) A deep space High-E is any deep space object with an eccentricity greater than 0.4 and perigee less than 200 km.

9.4.2. (U) Messages. The SCC generates and transmits the following messages:

9.4.2.1. (U) TIP Alert Message (MU14) at the following times prior to predicted decay: Four days, 3 days, 2 days, 1 day, 12 hours, 6 hours, and 2 hours. A Final TIP Alert Message is generated by the SCC once the object has reentered.

9.4.2.2. (U) Print out the TIP 2-Hour Missile Warning Ephemeris Message (SU61) and provide it to the MWC.

9.4.2.3. (U) If a user such as National Air Intelligence Center (NAIC) requires more advance notice on a particular object, transmit TIP Alert message 10 days and 7 days prior to predicted decay on that object per request.

9.4.3. (U) RA Tasking.

9.4.3.1. (U) Approximately 48 hours before predicted decay increase tasking to a minimum of CAT 2T.

9.4.3.2. (U) Approximately 24 hours before predicted decay increase tasking to a minimum of CAT 1T.

9.4.3.3. (U) Increase tasking priority, as necessary, to ensure sufficient observations are collected.

9.4.3.4. (U) Exclusion List RA tasking will be directed by CMOC/J3S. (See **Chapter 13** for more information about exclusion list objects.)

9.4.3.5. (U) Normal decay tasking remains per Sensor Tasking message (SU66).

9.5. (U) SCC Reportability Actions.

9.5.1. (U) Reportability Prediction. Prediction generated 6 hours prior to final decay and/or 2 hours prior to final decay indicates a possible reentry over the FSU, Southwest Asia or other designated areas. Possible reentry is indicated when any part of the prediction's ground trace from the point 15 minutes before impact to the point 15 minutes after impact falls over the designated area.

9.5.2. (U) RA Break-Up. RA object breaks up at any time after 6 hours prior to predicted final decay, AND the pieces will overfly the FSU, Southwest Asia or other designated area within the next six revolutions. (In this case report immediately when a breakup is suspected.) Due to inherent differences between SCC and ASCC processing, breakups will be assessed and reported based on "worst case" orbit analysis.

9.5.3. (U) OPREP-3 Actions. For RAs that are high interest and/or reportable, transmit an OPREP-3 PINNACLE report at the 6 and 2-hour point prior to reentry and a final report once object has reentered. Pass a verbal OPREP-3 PINNACLE report within 15 minutes of a suspected breakup for RAs within 6 hours of final decay and will overfly the FSU, Southwest Asia or other designated areas within the next six revolutions. Transmit the hardcopy OPREP-3 PINNACLE within 1 hour after the voice transmission. See **Attachment 8** for procedures.

9.6. (U) Site Actions.

9.6.1. (U) Search/Track.

9.6.1.1. (U) RA Search/Track Requirements. Search + / - 2 minutes for all CAT 1 and CAT 2 RA objects. Follow any additional SCC search requirements when requested.

9.6.1.2. (U) High-E Search/Track Requirements. Sites will search + / - 5 minutes for all CAT 1 and CAT 2 High-E RA objects.

9.6.2. (U) RA Correlation. Objects within + / - 5 minutes in period and + / - two degrees in inclination to primary ELSET are considered correlated.

9.6.3. (U) Reporting and Data Transmission.

9.6.3.1. (U) Voice Reports.

9.6.3.1.1. (U) Sites except MSSS. Make POS/NEG reports to the SCC, if required. See **Attachment 4** for voice report format.

9.6.3.1.2. (U) MSSS. Make POS/NEG reports on all CAT 1 RA objects and CAT 2 RA objects as directed by the SCC.

9.6.3.2. (U) Mechanical Radar Requirements. Record and report to the SCC "hit no lock" data on RA passes when it occurs. Include time, azimuth, elevation, range, and range rate. This information improves the final RA prediction and narrows the confidence window.

9.6.3.3. (U) MSSS Data Collection Requirements.

9.6.3.3.1. (U) Collect all possible data from time of acquisition until the object passes beyond the site's coverage IAW tasking table (see **Table 1.1.**).

9.6.3.3.2. (U) For passes that are not solar-illuminated use IR acquisition techniques. Hold signatures on site unless directed by USSTRATCOM/OP24 to transmit the data.

9.6.3.3.3. (U) Optical sites cannot determine an object's RCS, however, they will respond to SCC metric observation tasking and provide Visual Magnitude.

9.6.3.3.4. (U) SOI data collection on RA objects is normally not required. USSTRATCOM/OP24 will initiate special tasking on particular RA objects as required.

9.7. (U) SCC Post Decay Actions.

9.7.1. (U) Evaluate Reports.

9.7.1.1. (U) Evaluate L&PI and/or Reentry reports for possible correlation with a RA object.

9.7.1.2. (U) Delog Request. If no IR data is received and the space object is of high-interest, request an emergency delog through the MD to help determine if a reentry occurred. For each delog request, give the MD the window of time to look for event, location, type of event, and delog type. Space-based sensor data can be obtained and fused with ground-based surveillance data for post reentry processing.

9.7.2. (U) Monitor Observations. After the predicted decay time, monitor site observations to determine whether the RA object or Normal Decay object has in fact decayed. Sites will perform early and late searches as directed by the SCC.

9.7.3. (U) Decay Criteria.

9.7.3.1. (U) Reentry Assessment (RA) Objects. A RA object can be considered decayed when three sites attempt to track and do not acquire the object (three "no-shows").

9.7.3.2. (U) Normal Decay Objects. A normal decay object can be considered decayed from the object catalog 2 days after suspected decay date and three sites report no-shows.

9.7.4. (U) Decay Message. Send a Satellite Decay message (MU59) to sites.

9.7.5. (U) Notify NMCC. Notify the NMCC Surveillance Officer through the CMOC MD if told that a RA object or any decayed man-made space object has been recovered on the ground. Attempt to correlate the recovered object with historical RA reentries and provide that information to NMCC.

9.8. (U) Event Termination. Sites will delete tasking on RA objects and Normal Decay objects upon receipt of a Satellite Decay message (MU59) from the SCC.

Chapter 10

SATELLITE BREAKUP (U)

10.1. (U) Satellite Breakups. A satellite breakup is defined as the unplanned separation of many objects from a payload, rocket body, or other orbital structure, which is essentially destroyed. The primary known causes of satellite breakups are propulsion-related events and accidental detonations. Due to the violent nature of this type of event and the resulting high ejection velocities, debris from a satellite breakup can be ejected into orbits higher or lower in both period and inclination than the parent object. The number of pieces detected will vary considerably depending on the satellite's orbital parameters, collision variants and available site coverage.

10.2. (U) Initial Indications.

10.2.1. (U) Site Detection. Historically, the capability of the site network to detect a satellite breakup can vary significantly, based upon the orbit of the satellite. Portions of the SSN will see indications of near earth breakups usually on the first pass after the event. For deep space, highly-inclined breakups, initial detection and tracking will usually be limited to the NSSS and Eglin; the near earth phased array radars will not be able to detect and track the pieces until they have decayed to lower orbits.

10.2.2. (U) Site Notification to SCC. If a site detects a multiple headcount (two or more associated pieces observed) during a single track notify the SCC crew with a POS/NEG voice report within 5 minutes of the end of the pass. Follow any additional tasking requirements as directed by the SCC. When notifying the SCC of a possible breakup, sites will provide the period, inclination and RCS on the largest piece, a headcount of associated pieces, the parent satellite number (if known), and the UCT range. Optical sites will provide a headcount and visual magnitudes of breakup associated pieces, and the parent satellite number (if known). Continue breakup procedures every pass until otherwise notified by the SCC.

10.3. (U) SCC Breakup Actions.

10.3.1. (U) Breakup Determination. After a report from a site of a possible breakup, the SCC crew will send a Possible Breakup Notification message (MU99 Free Text) to the SSN and then task the next phased array radar sites and/or NSSS as required to confirm the breakup. See **Attachment 2** for message format. The SCC will attempt to determine if the reported multiple headcount could be caused by something other than a breakup (i.e., close conjunction between two objects).

10.3.2. (U) Breakup Confirmation. A breakup is confirmed when a multiple headcount is reported on a satellite by two or more sites. If the orbit of the satellite or site availability is such that only one site has visibility, the breakup will be confirmed when that site reports a multiple headcount on the next pass. In addition, the Breakup Officer(s) may confirm the breakup based upon historical data (i.e., multiple headcount on an object type with many known past breakup events). Upon confirmation, the SCC will send a "Confirmed Breakup" message (MU99 Free Text) to the site network. See **Attachment 2** for message format.

10.3.3. (U) Breakup Cancellation. If after further analysis the reported multiple headcount was caused by something other than a breakup, the SCC will send a "Breakup Cancellation" message (MU99 Free Text) to the site network. See **Attachment 2** for message format.

10.4. (U) Site Actions.

10.4.1. (U) Metric Observations. Upon receipt of a Confirmed Breakup message, implement automatic tasking requirements as shown in **Table 10.1.** or as directed in the message. Sites will initiate a plus/minus 10-minute search on the parent satellite unless tasked otherwise by the SCC. Send observations to the SCC on all uncorrelated objects within + / - 10 minutes in period and + / - 0.5 degrees in inclination relative to the parent satellite.

10.4.2. (U) SOI Data Collection and Reporting. Take SOI data during the first pass after notification of a breakup IAW the automatic tasking in **Table 10.2.** and provide the signature data to USSTRATCOM/OP24.

Table 10.1. (U) Automatic Metric Tasking for Satellite Breakup. (U)

NEAR EARTH			
SITE	PARENT SAT	PIECES BEFORE RECEIPT OF ELSET 1	PIECES AFTER RECEIPT OF ELSET 1
ASC, BLE, CAV, CLR, COD, EGL, FYL, GB2, SHY, THL, MIL, ALT	2C	3C (or equivalent number of obs)	3C
NAV	2	3	3
DEEP SPACE			
SITE	**PARENT SAT**	**PIECES BEFORE RECEIPT OF ELSET 1**	**PIECES AFTER RECEIPT OF ELSET 1**
EGL, GB2, MIL, ALT, Optical	2E	3S	3C
NAV	2	3	3

Table 10.2. (U) Automatic SOI Tasking for Satellite Breakup. (U)

SITE TYPE	TIME PERIOD	TASKING	# OF SOISIG RPTS
Radar	Pass on which breakup is detected, or first pass after notification.	Parent Satellite - 2V	One per object
Optical (DS only)	Pass on which breakup is detected, or first pass after notification.	Parent Satellite - 2Y	One per object

10.5. (U) SCC Breakup Processing.

10.5.1. (U) Determine Reportability. An OPREP-3 PINNACLE is required in the following cases:

10.5.1.1. (U) Confirmed breakup of any active payload(s). This fulfills a requirement for the NMCC to be notified of possible deliberate or accidental destruction of a U.S. payload(s), as well as possible damage or destruction to a foreign-owned satellite.

10.5.1.2. (U) Suspected breakup of a normal or high interest RA object within 6 hours prior to final decay, if the pieces will overfly the CIS or other designated area within the first six revolutions after breakup.

10.5.2. (U) OPREP-3 Report. The MD will make the voice OPREP-3 PINNACLE as rapidly as possible, but within 15 minutes of determination that the event is OPREP-3 reportable. Transmit the hardcopy OPREP-3 PINNACLE within 1 hour after the voice transmission. (See **Attachment 8** for procedures.)

10.6. (U) Piece Cataloging. Pieces resulting from a satellite breakup will be cataloged when maintainable element sets are available.

10.6.1. (U) Cataloging will be performed IAW Post-Launch Procedures as described in paragraph **4.11.**

10.6.2. (U) Generate analyst satellites as necessary (using the numbering scheme in **Attachment 3**) for pieces before cataloging.

10.7. (U) Event Termination. Sites will continue to follow the automatic tasking until receipt of Sensor Tasking (SU66) message.

Chapter 11

ORBITAL SAFETY (U)

11.1. (U) General. The SCC in support of launch activity and on-orbit operations will perform Conjunction Assessment (CA). CA is the process of determining the closest approach of two objects to include the time of closest approach (TCA) and the distance between the objects at that time. This function is centralized at the SCC. On-orbit CA is further broken into manned and unmanned support and launch forecasts. Collision Avoidance (COLA) is the process of determining and implementing courses of action by the satellite control authority (SCA) to avoid potential on-orbit collisions.

11.2. (U) Standards. Conjunction assessment and launch analysis calculations shall conform to joint astrodynamic standards as prescribed by USSTRATCOM. Capabilities and processes shall utilize the accuracy obtained from special perturbation orbit propagation algorithms.

11.3. (U) Space Safety. Space Safety is made up of both Launch and Orbital Safety applied in both routine and emergency operations to improve mission effectiveness. Components will provide specific guidance that directs units to operate a risk-based decision criteria for performing COLA and on-orbit operations. Criteria used in such guidance should consider all aspects of foreseen situations. At a minimum, aspects such as mission, satellite catalog accuracy and availability, analysis tool capability, and satellite health/capabilities will be considered.

11.4. (U) External Agency Coordination. Coordination with agencies external to USSTRATCOM will normally occur through Higher Headquarters (HHQ) channels. The policies and procedures are described in reference (e) and include the following:

11.4.1. (U) Interface. The standard interface to commercial, civil, and international entities will be through NASA/Goddard Space Flight Center (Flight Mission Support Office Code 501).

11.4.2. (U) Emergency Situations. In an emergency situation the CMOC/CC (Command Center), or any senior CMOC staff member authorized to act on his behalf, may coordinate directly with other nations or organizations when necessary to protect DoD or other national space assets. Emergency priority requests are processed as appropriate to meet time constraints. This direct access - i.e., direct liaison authorized (DIRLAUTH) - to outside satellite control authorities is limited to situations in which the CMOC/CC, or any senior CMOC staff member authorized to act on his behalf, determines that events require immediate coordination with an outside SCA to protect DoD or other national space assets. This DIRLAUTH includes situations involving a close approach and any other circumstances placing these space assets at risk.

11.5. (U) Launch Screening. Launch screening is the process of determining the available launch windows for a space or missile launch. The SCC will accomplish launch screening for domestic and cooperative launches involving both manned and unmanned vehicles when requested by the launch agency or owner/operator. Supporting data is obtained from the launch nominals provided in the R-15, VIM, or vectors supplied by the range.

11.5.1. (U) Information Required. Information required from the launching authority include: the point of contact and appropriate phone/facsimile (fax) numbers; the method and address for sending the results; the injection vector; the time to vector; the launch window; the desired screen duration; the screening method and size; the type of objects to screen against; and the runs that are required.

11.5.2. (U) Requirement for New Windows. If a space event (Launch, Maneuver, Breakup, Separation, etc.) occurs between completion of the final required run and the time of launch, notify the launching authority that new windows may be required. Re-compute the windows when new ELSETs are available. Pass conjunction results to the launch authority. If there is a change in launch status, pass new windows/waits.

11.5.3. (U) Launch Screening Support. The SCC will accomplish launch screening for all domestic space and missile launches involving both manned and unmanned launches.

11.5.3.1. (U) Launch trajectories will be screened against all orbiting manned objects resident in the satellite catalog as well as associated unmanned objects, if requested.

11.5.3.2. (U) Screening will be accomplished prior to launch at times specified by the requesting agency or as required to ensure manned spaceflight safety and to provide assurance of both orbiting and launching missions.

11.5.3.3. (U) Keep out volumes used for screening will be in accordance with procedures generated by the launching agency.

11.5.3.4. (U) Assessment results will be passed to the customer for further risk assessment and launch authority decision-making.

11.6. (U) On-Orbit Conjunction Assessment (CA). As the number of orbiting objects increases, the potential for collision increases risk to both manned and unmanned assets.

11.6.1. (U) Manned Conjunction Assessment. The SCC provides close conjunction predictions in support of manned spaceflight mission. The primary satellite used in the CA run is either the nominal or the actual ELSET for the manned assets and payloads deployed during the manned mission. Secondary satellites for the CA run include all resident space objects currently on orbit. Conjunction data is transmitted to NASA mission control.

11.6.1.1. (U) CA Notifications.

11.6.1.1.1. (U) NASA's Trajectory Operations Officer (TOPO) will be the individual solely responsible for coordination with the SCC on all conjunctions for the International Space Station (ISS) and associated vehicles. The SCC will communicate with the on-call TOPO via pager. The beeper number for conjunction notification shall be used only for notifying the Mission Control Center-Houston (MCC-H) of any operational type issues related to conjunction operations. The prime on-call TOPO response is expected within 20 minutes. If no response is heard within 20 minutes, page again and a TOPO that is not prime on-call should respond.

11.6.1.1.2. (U) NASA's Flight Dynamics Officer (FDO) will be the individual solely responsible for coordination with the SCC on all conjunctions for any Space Transportation System (STS) (space shuttle) mission, including docked operations with the ISS.

11.6.1.2. (U) Screening for Manned Spaceflight. The SCC at a minimum of once per shift will screen on-orbit manned or habitable vehicles against all resident space objects.

11.6.1.2.1. (U) Initial screening is accomplished for 72 hours in the future. The SCC will increase tasking on any objects penetrating a + / - 10km Delta U (DU) X + / - 40km Delta V (DV) X + / - 40km Delta W (DW) box.

11.6.1.2.2. (U) The SCC will notify the FDO of any STS conjunctions penetrating a + / - 5km (DU) X + / - 25km (DV) X + / - 25km (DW) box up to 36 hours into the future.

11.6.1.2.3. (U) The SCC will notify the TOPO of any ISS conjunctions penetrating a + / - 2km (DU) X + / - 25km (DV) X + / - 25km (DW) box up to 72 hours into the future.

11.6.1.2.4. (U) Keep out volumes used for screening will be in accordance with **Table 11.6.** or customer requirements.

11.6.1.2.5. (U) Assessment results will be passed to NASA for evaluation and further assessment. NASA will determine the need for corrective / evasive actions.

11.6.1.2.6. (U) If any satellite penetrates the following 'safety boxes' after Special Perturbations (SP) screening, notify the FDO or TOPO, as required. The box used for CA is defined in **Table 11.1.**

11.6.1.2.7. (U) Worst case conjunction results between SCC and ASCC will always be passed to NASA/Johnson Spaceflight Center (NASA-JSC). Astrodynamic support workstation (ASW) conjunction data will always be passed to NASA-JSC. If conjunction TCA is outside 36 hours, and either the SCC or ASCC has reached a solution first, allow other center 15 additional minutes to complete run to compare worst case.

Table 11.1. (U) CA Box Parameters. (U)

EVENT	DU x DV x DW
Pre-Launch (STS Only)	$\pm 5 \times \pm 15 \times \pm 5$ km
Pre-Launch (Other)	$\pm 5 \times \pm 15 \times \pm 5$ km
On-Orbit Screening For Increased Tasking 72 hours into the future	$\pm 10 \times \pm 40 \times \pm 40$ km
STS Notification 36 hours into the future	$\pm 5 \times \pm 25 \times \pm 25$ km
ISS Notification 72 hours into the future	$\pm 2 \times \pm 25 \times \pm 25$ km
U = Radial vector. A vector in the orbit plane, pointing from the satellite away from the center of the Earth. Positive is in the direction opposite the Earth (opposite nadir). W = Cross-Track vector. A vector perpendicular to the orbital plane, parallel to the orbit angular momentum vector. Defined by the U vector crossed into the satellite instantaneous velocity vector. It is positive to the left of satellite line of travel. V = In-Track vector. A vector in the orbit plane, perpendicular to the U vector, and positive in the direction of satellite motion. Defined by the W vector crossed into the U vector.	

11.6.2. (U) Unmanned Conjunction Assessment. The SCC will conduct initial conjunction screening and conduct refined conjunction assessment as necessary. Units with SCA will assess the operational risks associated with all maneuvers (station keeping, repositioning, etc.), possible conjunctions, interference, and anomalies affecting satellite orbit.

11.6.2.1. (U) Satellite Control Authority (SCA) Actions.

11.6.2.1.1. (U) Units with SCA will provide individual program requirements to the SCC for primary object keep-out-zones and separation distance thresholds between primary and secondary keep-out-zones. Units with SCA will send vectors to the SCC.

11.6.2.1.2. (U) Units with SCA will coordinate all repositioning of satellites, including any anomalies affecting satellite orbit, with the SCC. The SCC will accomplish additional CA runs as necessary due to conjunctions.

11.6.2.1.3. (U) Upon examination of the CA results, units with SCA will assess collision risk and develop the appropriate courses of action. Decision authority for approval of courses of action is the appropriate Wing Commander.

11.6.2.1.4. (U) All conjunction incidences, and decisions affecting satellite mission capability will be forwarded to USSTRATCOM/OP50 via the USSTRATCOM Global Operations Center (GOC).

11.6.2.2. (U) SCC Actions. As a minimum the SCC will conduct daily initial CA screening. Daily CA will, at a minimum, assess all USSTRATCOM-supported satellites against the full satellite catalog. Results of screening will be forwarded to units with SCA for assessment and determination of courses of action. Initial screening will be accomplished against the keep-out zones established by each SCA for their vehicles. If the zones are violated, tasking may be increased and the assessment refined.

11.6.2.2.1. (U) The SCC will verify Air Force Satellite Control Network (AFSCN) vectors as provided by units with SCA for inclusion into CA screening.

11.6.2.2.2. (U) Only SCC verified data is used for CA. In close approach situations, the SCC may verify vectors as provided by non-DoD SCAs for inclusion into CA screening.

Chapter 12

UNCORRELATED TARGETS (U)

12.1. (U) General.

12.1.1. (U) Radars. The SSN often detects objects on orbit that do not correlate with orbital elements of any cataloged objects in site's databases. These UCTs are important because such objects could be previously undetected or recently maneuvered foreign satellites or missiles with hostile missions. Often, however, they can be correlated to other non-hostile space objects.

12.1.2. (U) Optical Network. Optical site(s) and space-based observing systems will tag any acquired and tracked object that cannot be correlated to any known satellite as an UCT.

12.2. (U) Categories. UCTs are classified into the following categories:

12.2.1. (U) Nonsignificant UCT. A UCT with an average RCS of less than 1 square meter.

12.2.2. (U) Significant UCT. A UCT with an average RCS of 1 square meter or more. **NOTE:** Optical sensors consider all UCTs as Significant unless processing a NFL.

12.2.3. (U) Critical UCT. Any UCT which is suspected to be related to a new foreign launch. Specifically, a UCT is "CRITICAL" if it meets one or more of the following criteria:

12.2.3.1. (S) (b)(1) USSC

12.2.3.2. (S) (b)(1) USSC (b)(1) USSC

12.2.3.3. (S) (b)(1) USSC (b)(1) USSC

12.2.3.4. (S) (b)(1) USSC (b)(1) USSC (b)(1) USSC

12.2.4. (U) False UCT. Sensors may receive indications of a UCT due to RF interference, sensor multi-tracking peculiarities, noise, tracking of the moon or sun, or tracking of aircraft. Unless confirmed as False, treat all UCT indications as authentic. Retain data collected from these events on site as directed by reference (c). Stored data will be used for investigation of a possible launch or for Electronic Warfare/Electro-Magnetic Interference analysis.

12.3. (U) UCT Classification.

12.3.1. (U) Near Earth. Near earth UCT observations and element sets are UNCLASSIFIED.

12.3.2. (U) Deep Space.

12.3.2.1. (U) Geocentric Observations. Deep space UCTs having a period equal to 225 minutes or greater are classified SECRET.

12.3.2.1.1. (U) Radar data. Observations, ELSETs, and other data are classified SECRET.

12.3.2.1.2. (U) Optical observations are classified SECRET until correlated to known object by the SCC or ASCC. Then they assume the classification of the object. USSTRATCOM may accept uncorrelated unclassified information from sensors not bound by this SD, provided no feedback is given on the quality or correlation of the observations. As above, these observations when correlated assume classification of the object.

12.3.2.2. (U) Heliocentric observations, ELSETs, and other data are UNCLASSIFIED.

12.4. (U) Site Actions.

12.4.1. (U) Critical UCT Detection.

12.4.1.1. (S) (b)(1) USSC
(b)(1) USSC

12.4.1.2. (U) Data Collection. Critical UCTs are CAT 1 tasking. However, if multiple critical UCTs are detected, a sensor may not be able to monitor all of them. Make every effort, consistent with equipment and personnel capabilities or limitations, to acquire and track the payload(s) associated with a probable NFL. If a CAT 1 conflict occurs, call the SCC for direction.

12.4.2. (U) Significant and Nonsignificant UCTs. Voice reports are required for CAT 1 and CAT 2 objects with headcounts greater than one IAW paragraph **14.1.** For optical sites, since the sensor cannot determine the category of a UCT by size, consider all UCTs "Significant" unless enough data is available to categorize an object as a "Critical" UCT. Transmit all UCT observations within 5 minutes after end of track to the SCC.

12.4.3. (U) Optical Network.

12.4.3.1. (U) When a satellite cannot be correlated to a known ELSET it will be tagged as a "Possible" UCT. It will then be re-tasked in an attempt to correlate it to a known satellite. If correlated, the observations will be tagged with the correlating satellite number and normal observations will be transmitted.

12.4.3.2. (U) If a UCT does not correlate to a known satellite, it will be tagged as a "Confirmed" UCT. Optical sites will accomplish those processing actions associated with Significant UCT outlined above.

Chapter 13

EXCLUSION LIST SATELLITE PROCESSING (U)

13.1. ~~(S)~~ General. (b)(1) USSC

(b)(1) USSC

13.2. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

13.3. (S) (b)(1) USSC

(b)(1) USSC

13.4. (U) Routine Metric Tasking. Routine tasking for exclusion list satellites is directed by CMOC/J3SX, and then passed to sites via the SCC. Tasking changes for exclusion list satellites are prohibited without CMOC/J3SX approval. Questions regarding exclusion list tasking should be directed to the CMOC/J3SX.

13.5. (U) SOI Tasking.

13.5.1. (S) (b)(1) USSC

(b)(1) USSC

13.5.2. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

13.6. (U) Unauthorized SOI.

13.6.1. (U) Site Actions. Sensor sites that obtain unauthorized SOI on exclusion list satellites must accomplish the following actions:

13.6.1.1. (S) (b)(1) USSC

13.6.1.2. (S) (b)(1) USSC

(b)(1) USSC

13.6.2. (U) SCC Actions. If the SCC or CMOC/J3SX discovers that SOI was taken on an unauthorized object, it will accomplish the following actions:

13.6.2.1. (S) (b)(1) USSC

13.6.2.2. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

13.7. (U) Security Precautions.

13.7.1. (U) Classification Guidance (see **Table 13.1.**). These security matrices are a general guide and may not include all possible combinations of information. Questions regarding circumstances not covered in this section should be directed to CMOC/J3SX.

13.7.1.1. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

13.7.1.2. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

13.7.1.3. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

13.7.1.4. (U) UNCLASSIFIED and SECRET data is releasable to Canadian nationals with a valid need-to-know (such as Canadians assigned to 1 SPCS or to a site). Need-to-know is determined by CMOC/J3SX.

13.7.2. (U) Data Release. CMOC/J3SX obtains approval for the release of exclusion list satellite data. When approved, receipt of exclusion list data and information is only for use of the approved requesting agency and only for the approved purpose. Exclusion list information may never be redistributed in any format beyond the requesting agency without the written approval of CMOC/J3SX. This includes redistribution to other approved agencies, supporting agencies and/or government contractors. All requests for information must be revalidated by CMOC/J3SX on an annual basis.

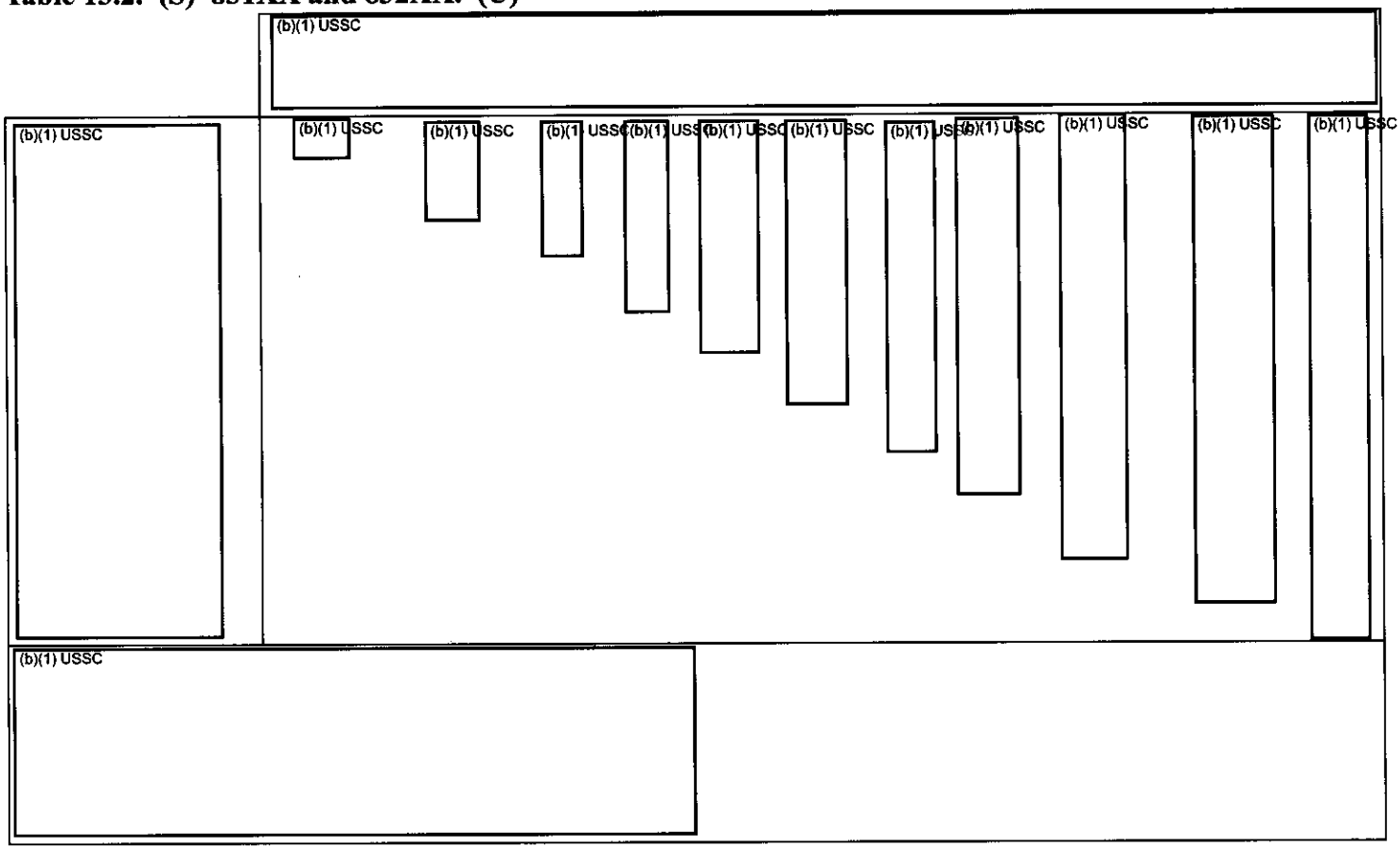
13.7.2.1. (S) (b)(1) USSC

Table 13.1. (U) 825XX through 829XX, 834XX, and 860XX through 869XX. (U)

	INT'L DESG	COMMON NAME	IRON #	OPS #	MSN	MSN #	LCH SITE	LCH DATE	ELSET DATA	ANALYST SAT #	PGM #
SCC NUMBER	U	U	S	U	SCI	SCI	U	U	S	S	S
INT DESIGNATOR		U	S	U	SCI	SCI	U	U	S	S	S
COMMON NAME			S	U	SCI	SCI	U	U	S	S	S
IRON NUMBER				S	SCI	SCI	S	S	S	S	S
OPS NUMBER					SCI	SCI	U	U	S	S	S
MISSION						SCI	SCI	SCI	SCI	*	SCI
MISSION NUMBER							SCI	SCI	SCI	*	SCI
LAUNCH SITE								S	S	S	S
LAUNCH DATE									S	S	S
ELSET DATA										U	S
ANALYST SAT #											S

U = Unclassified S = Secret SCI = Sensitive Compartmented Information

Table 13.2. (S) 831XX and 832XX. (U)



Chapter 14

SITE EVENT MESSAGES AND REPORTS (U)

14.1. (U) General. This chapter describes event messages and reports sent by the SSN to the SCC and USSTRATCOM/OP24. In addition, this chapter describes various documents that must be maintained by sites. These documents help in analyzing space events and allow for improvements to current standard procedures. These are minimum requirements necessary for standardization. Adhere to component and local instructions if they are more stringent.

14.2. (U) Positive or Negative (POS/NEG) Report. This serves to inform the SCC about the status of a high-interest object it is currently processing (such as a new launch) or gives a tip-off of a new event (such as a maneuver or breakup) that requires SCC attention.

14.2.1. (U) Reporting Requirements. Sites will report to the SCC whenever any object meets one of the following criteria:

14.2.1.1. (U) All CAT 1 objects (report results of each CAT 1 pass).

14.2.1.2. (U) All CAT 2 objects correlating to a pre-planned launch that are tracked before ELSET 1 publication.

14.2.1.3. (U) Any POS/NEG reportable or CAT 2T object that was not acquired.

14.2.1.4. (U) Any CAT 2 object that shows a TOES of greater than 6 seconds (for objects with periods less than 225 minutes), 12 seconds (for objects with periods between 225 and 1,100 minutes), or 60 seconds (for objects with periods greater than 1100 minutes). For optical sites, the reportable criterion is met when an object's position differs from its nominal position by more than 1/4 degree.

14.2.1.5. (U) Any CAT 1 or 2 object showing a headcount greater than one. Associated piece criteria is within + / - 5 minutes in period and within + / - two degrees in inclination to the parent object's element set.

14.2.1.6. (U) Any other object with multiple headcounts. A multiple headcount is two or more associated pieces observed during a single track.

14.2.1.7. (U) When specifically tasked for a voice report by the SCC.

14.2.2. (U) POS/NEG Voice Report Format. See **Attachment 4**.

14.2.3. (U) POS/NEG Report Transmission. Pass the report within 5 minutes after the object's end of track. Space-based systems report to the SCC within 20 minutes of negative acquisition from first attempt to track.

14.2.3.1. (U) NEG reports on a NFL before ELSET 1 is published must be reported over secure voice.

14.2.3.2. (U) POS reports may be reported on an unsecure line, but if before ELSET 1, use the "critical UCT" format as described below.

14.3. (U) Critical UCT Report. This report passes immediate tracking data on a new foreign launch to the SCC in its early stages of processing.

14.3.1. (U) Reporting Requirements. Sites must make this report to the SCC upon detection of any object meeting the criteria in **Chapter 12**.

14.3.2. (U) Critical UCT Voice Report Format. See **Attachment 4**.

14.3.3. (U) Critical UCT Report Transmission. Pass Critical UCT reports via voice to the SCC within 5 minutes after end of track. Space-based systems report to the SCC within 20 minutes of negative acquisition from first attempt to track. Critical UCTs may be reported over non-secure lines if necessary, but if ELSET 1 has not yet been published, refer to all objects only as "critical UCTs."

14.4. (U) Miss Report (SA19).

14.4.1. (U) Report Requirements. Sites send a Miss Report when specifically requested by the SCC. This report records information to reconstruct the sequence of events that resulted in a missed pass. This information is used to improve requirements and procedures. Examples of when the SCC would request a Miss Report include the following:

14.4.1.1. (U) Failure of a site to track a new foreign launch on ANCHOR or folder tasking.

14.4.1.2. (U) Failure to track a POS/NEG object.

14.4.1.3. (U) Failure to report a TOES on a POS/NEG object within 5 minutes of end of track.

14.4.1.4. (U) Failure to accomplish special SCC tasking or direction.

14.4.2. (U) Miss Report Format. Send this report via message using the appropriate format for the site type as detailed in **Attachment 2**.

14.4.3. (U) Miss Report Transmission. Pass Critical UCT reports via voice to the SCC within 5 minutes after end of track. Critical UCTs may be reported over non-secure lines if necessary, but if ELSET 1 has not yet been published, refer to all objects only as "Critical UCTs."

(b)(6) USSC MAJ, USAF
Command Secretariat

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION (U)

References

(a) AFI 10-201, Status of Resources and Training System, 8 January 2002

(b) AFI 37-124, The Information Collections and Reports Program, 1 October 1994

(c) SD 505-1 Vol I, Space Surveillance Operations – Basic Operations, 13 February 2004

(d) SD 523-2, (S) Theater Event System (TES) Architecture and Operations, Draft

(e) UI 10-5, DoD, Commercial, Civil, and Foreign Space Support, 1 April 2002

(f) CJCSI 2310.01A, Implementing Procedures for Agreement on Measures to Reduce the Risk of Outbreak of War Between the United States of America and the Former Soviet Union (FSU), 3 October 2000

(g) EAP-JCS Vol VI, Emergency Action Procedures Chairman, Joint Chiefs of Staff, Volume VI. Conferences For Tactical Warning and Attack Assessment, 15 December 1998

(h) Article 3, 1971 Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War between the United States and the Union of Soviet Socialist Republics, 30 September 1971

Abbreviations, and Acronyms

1 SPCS--1st Space Control Squadron

1 SPCS/LO--1st Space Control Squadron/Launch Officer

ACO--Aerospace Control Officer

AFB--Air Force Base

AIG--Address Indicator Group

ALT--ALTAIR, Kwajalein

ALTAIR--Advanced Research Projects Agency Long Range Tracking and Instrumentation Radar

ASAT--Anti-Satellite

ASC--Ascension Island

ASCC--Alternate Space Control Center

BLE--Beale AFB, California

CA--Conjunction Assessment

CAT--Category

CAV--Cavalier, North Dakota

CCC--Consolidated Command Center

CC--Command Center

CD--Command Director

CIS--Commonwealth of Independent States

CLR--Clear, Alaska

CMOC--Cheyenne Mountain Operations Center

CMOC/J3S--Space Operations Division

COD--Cape Cod AFB, Massachusetts

COLA--Collision Avoidance

DEFSMAC--Defense Special Missile and Astronautics Center

DGC--Diego Garcia GEODSS site

DoD--Department of Defense

DOES--Degrees Off Element Set

DS--Deep Space

DSP--Defense Support Program

DU--Delta U, change in the Radial vector

DV--Delta V, change in the In-Track vector

DW--Delta W, change in the Cross-Track vector

EGL--Eglin AFB, Florida

ELSET--Element Set

EODET--Early Orbit Determination

FDO--Flight Dynamics Officer

FOUO--For Official Use Only

FSU--Former Soviet Union

FYL--Fylingdales, UK

GB2--Globus II, Vardo, Norway

GEODSS--Ground-Based Electro-Optical Deep-Space Surveillance

High-E--High Eccentricity

HIT--High Interest Tasking

IAW--in accordance with

ILAM--Initial Launch Alert Message

IR--Infrared

ISS--International Space Station

IWSD--Integrated Weapon System Database

JIC--Joint Intelligence Center

KAE--Kaena Point, Hawaii. (Western Range supporting sensor.)

KM--Kilometer

KWJ--Kwajalein Island

L&PI--Launch and Predicted Impact

LCU--Launch Correlation Unit

LCUDO--Launch Correlation Unit Duty Officer

MAU--Maui GEODSS, Maui, Hawaii

MD--Mission Director

MIL--Millstone, Massachusetts

MMW--Millimeter Wave Radar

MOSS--Moron Optical Surveillance System

MSSS--Maui Space Surveillance System

MWC--Missile Warning Center

NASA--National Aeronautics and Space Administration

NAV--Short for NAVSPACECOM

NAVSPASUR--NAVSPACECOM Space Surveillance; Former name for the NSSS

NFL--New Foreign Launch

NMCC--National Military Command Center

NNSOC--Naval Network and Space Operations Command

NORAD--North American Aerospace Defense Command

NSSS--Naval Space Surveillance System

OC3F--Optical Command, Control, Communications Facility

OIW--Operational Intelligence Watch

OPREP--Operational Report

POI--Period of Interest

POS/NEG--Positive/Negative

PPLF--Pre-Planned Launch Folder

PPL--Pre-Planned Launch

RA--Reentry Assessment

RCO--Range Control Officer

RCS--Radar Cross Section

SATRAN--Satellite Reconnaissance Advance Notice

SCA--Satellite Control Authority

SCA--Space Control Analyst

SCC--Space Control Center

SD--Strategic Command Directive

SHY--Cobra Dane, Eareckson AFS, Alaska (Former name for Shemya Island; Still used as site nomenclature.)

SLR--Space Launch Reporting

SOC--Socorro GEODSS site, Socorro NM

SOISIG--SOI Signature

SOI--Space Object Identification

SSN--Space Surveillance Network

STS--Space Transportation System (shuttle)

TCA--time of closest approach

THL--Thule, Greenland

TIP--Tracking and Impact Prediction

TOES--Time Off ELSET

TOPO--Trajectory Operations Officer

TRADEX--Target Resolution and Discrimination Experiment

U.S.--United States

UCT--Uncorrelated Targets

USSTRATCOM--United States Strategic Command

USSTRATCOM/OP50--Space Enhancement Division

VIM--Vehicle Information Message

Terms--Terms are unclassified unless marked otherwise.

1 SPCS--1st Space Control Squadron. Subordinate to 14AF and 21SW; executes USSTRATCOM's space control mission, provides operational command and control of the SSN; operates the Space Control Center (SCC) and the Space Analysis Center (SAC).

18 SPSS--18th Space Surveillance Squadron. Controls the GEODSS, MSSS, and MOSS sensors.

21 OSS--21st Operations Support Squadron. Subordinate to 21SW; provides day to day operations and maintenance of the AF elements of the SSN.

21 SW–21st Space Wing. Subordinate to SPACEAF; provides operational guidance, support, policy and maintenance scheduling directly to the Air Force elements of the SSN.

ADCCP–Advanced Data Communications Control Procedures.

AFSCN--Air Force Satellite Control Network. Commands most U.S. military satellites; reports positional data on those satellites, through 50SW, to the SCC when requested.

AFSPC–Air Force Space Command.

ANCHOR Alert--An immediate notification (in most cases verbally) from the SCC to sensors that a new foreign space or missile launch has actually occurred. There are four different ANCHOR alert options, each of which identifies a specific type of launch event.

ASC–Ascension Island. Eastern Range supporting sensor.

ASCC–Alternate Space Control Center located in the NAVSPOC at Naval Space Command, VA.

Ascending/Descending Passes--Refers to site passes that occur on the same side of a satellite's orbit as the ascending or descending node, not to whether the object is rising or setting in relation to a specific sensor.

Boresight--A line of sight perpendicular to the array face; Applies to phased array radars.

Breakup--The unintentional breaking of a single on-orbit space object into two or more pieces.

Breakup Processing–The special procedures taken to analyze and catalog the pieces of a satellite breakup. It begins when a breakup is confirmed, and ends when the SCC determines that those pieces which have not yet been identified, cataloged, or decayed are best processed through normal UCT processing and not through special breakup procedures.

CCC--Combined Command Center of NORAD and USSTRATCOM, in CMOC, CMAFS, CO.

CD--Command Director; the senior NORAD crew member in the CCC.

CIC--Command Director; the senior NORAD crew member in the CCC.

Collateral Sensor–A sensor subordinates to USSTRATCOM but with a primary mission other than Space Surveillance support.

Confirmed Breakup–A breakup is confirmed when multiple headcounts on a satellite are reported by three sensors and the SCC rules out other explanations for the multiple headcount (such as a close conjunction between two or more objects).

CONOPs–Concept of Operations.

Contributing Sensor--A non-USSTRATCOM sensor under contract or agreement to support the SSN.

Cooperative Launch–A pre-planned launch originating outside the U.S. and involving the explicit cooperation of one or more U.S. agencies.

Critical UCT–A significant uncorrelated target (UCT) that is suspected to be related to a new foreign launch.

Cross-Track Search--Perpendicular to the orbital plane and positive to the left of the direction of flight.

CU--Common User

Decay Window--Perpendicular to the orbital plane and positive to the left of the direction of flight.

Dedicated Sensor--An USSTRATCOM-subordinate sensor with a primary mission of Space Surveillance support.

Deep Space (DS)--Orbit with a period of 225 minutes or greater.

Delog--The process of reviewing post mission IR data to look at past events or obtain additional IR data not previously observed or reported.

Deorbit--The intentional reentry of a satellite into the earth's atmosphere.

DISOB--Defense Intelligence Space Order of Battle (for Russian satellites).

DOES--Degrees Off Element Set. Used by optical sites.

Domestic Launch--A missile or space launch originating in the U.S. or from a U.S. platform.

EAP CJCS Vol VI--This document describes procedures and conferences used to report Space Events, Space Threats, and Significant Events to the NMCC, CJCS, and Secretary of Defense.

Early Orbit Determination (EODET) Conference--A telephone conference established by the SCC between a domestic launch agency or payload owner/operator and SSN sensors tracking at a critical time in the launch profile (payload deployment, boost into a new orbit, etc.). It is used to allow the sensors to give instant feedback on the status of the satellite directly to those concerned.

Element Set (ELSET)--Element Set. A mathematical representation of a satellite's orbit, in terms of period, inclination, etc.

ELSET 1--The first element set (orbital period, inclination, international designator, etc.) generated by the SCC on a newly launched space object. ELSET 1 criteria is established in the Historic Launch Chapter. The first element set generated by the SCC on a newly launched space object.

Eastern Range (ER)--U.S. launch site at Cape Canaveral, Florida.

Errant Liftoff ("Launch Agency Errant")--When a domestic launch vehicle does not achieve its planned liftoff parameters, cannot be confirmed destroyed, and its predicted impact point can reasonably be assumed to be outside range destruct lines.

False UCT--A UCT produced by noise, multiple bangs tracking of the moon or sun, or tracking of aircraft, etc.

Former Soviet Union (FSU)--The FSU consisted of Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

High Eccentricity (High-E) Decay Object--An object, meeting either RA or normal decay criteria, which has a high eccentricity (making its decay time and location especially difficult to predict). A near earth High-E is any object with a period less than 225 minutes, eccentricity greater than 0.1, and a perigee less than 250 km. A deep space High-E is any object with a period greater than 225 minutes, eccentricity greater than 0.4, and perigee less than 50 km.

High Interest Tasking (HIT)--An object that has an increased interest requiring additional tasking from SSN.

Historic Launch--A launch which follows a specific historic profile for which a launch folder is available to SSN.

Historic Launch Folder--A specific combination of launch site, booster, orbital inclination, and period for new foreign launches that have been observed in the past. Launch folders are maintained and updated by CMOC/J3.

Initial Launch Alert Message (ILAM)--A message sent by CMOC/J3to SSN sensors, based on data from the R-15, about an upcoming pre-planned launch. It details the predicted launch date and windows, nominal element set (ELSET) numbers, predicted schedule of events, object descriptions, tasking requirements and cataloging instructions.

In-Track Search--A search along the orbit path. It is positive in the direction of flight.

JSC--Johnson Spaceflight Center, Houston, Texas.

Launch Correlation Unit (LCU)--Collects, consolidates, and provides the National Military Command Center (NMCC) information about all scheduled domestic military and civilian space and missile launches. It assesses and reports to the NMCC on a near real-time basis, the possibility of an errant domestic missile or space launch which may be perceived as a threat to the Former Soviet Union (FSU).

LCU Conference--A telephone conference for a domestic launch established by the LCU (part of the MWC in Cheyenne Mountain) between the domestic launching agency, NMCC, the SCC, and other parties. The LCU Conference is brought up at least 30 minutes before liftoff, and the NMCC will be added to the LCU 15 minutes before liftoff. The NMCC adds additional agencies as appropriate. The LCU Conference is terminated when the launch is declared nominal, non-nominal or errant by the launching agency.

Mission Director (MD)--The senior USSTRATCOM crew member in the CCC.

Metric Observations--Sensor data showing the position of a space object.

Mission Profiles (MPs)--MPs are grouped into Mission Types to more simply describe overall SYSCAP for up-channel reporting. Thus, SYSCAP will be reported to the CCC according to the following four categories (for NE and DS each): Routine Space Track, Routine Intel, Alert (Event) Space Track, and Alert (Event) Intel.

Mission and Payload Assessment (MPA)--The use of SOI and metric data along with other intelligence sources; Signals Intelligence (SIGINT), Imagery Intelligence (IMINT), Human Intelligence (HUMINT), and Open Source Intelligence (OSINT), to determine payload mission(s), physical configuration, and status (active, inactive or mission ended).

NAVSPACECOM (NAV)--Naval Space Command continuous radar wave Fence.

NAVSPOC--NAVSPACECOM Space Operations Center.

Near Earth (NE)--An orbit with a period of less than 225 minutes.

New Foreign Launch (NFL)--A booster launched from a foreign country or agency that has not been announced or coordinated with USSTRATCOM.

Nominal ELSETs--Element sets, derived from information in the R-15, that describe each orbit segment in a pre-planned launch scenario. These are assigned five-digit numbers in the range from 70000 to 74999 (as shown in Attachment 3). Each nominal ELSET is in the format 7XXYY, where XX indicates a particular pre-planned launch, and YY denotes a particular element set for that launch. (The number "7XX00" refers to a particular launch in general.)

Nominal Liftoff ("Launch Agency Nominal")--When a domestic launch vehicle achieves its planned liftoff parameters (during powered flight), as determined by the launching agency.

Nominal Orbit ("SCC Nominal")--When any pre-planned launch vehicle achieves orbit, and its orbital parameters as compared to the nominal ELSETs provided in the ILAM are within the following bounds: Near earth - 5 minutes in period and one degree in inclination. Semisynchronous - 10 minutes in period and two degrees in inclination. Geosynchronous - 40 minutes in period and two degrees in inclination.

Non-Historic Launch--A launch that does not follow a known historic launch profile in terms of period and inclination of a satellite launched from a particular site.

Non-Nominal Liftoff ("Launch Agency Non-Nominal")--When a domestic launch vehicle does not achieve its planned liftoff parameters, but its predicted impact point remains within range destruct lines, and it can be safely destroyed if required.

Non-Nominal Orbit--When a domestic launch vehicle is declared nominal by the launching agency, but the payload injects into an orbit far enough off the pre-planned orbital parameters that the SCC must process it using NFL criteria.

Non-Reportable Space Launch--When a domestic launch vehicle is declared nominal by the launching agency, but the payload injects into an orbit far enough off the pre-planned orbital parameters that the SCC must process it using NFL criteria.

Non-Significant UCT--A UCT with an average RCS of less than 1 square meter.

Normal Decay Object--Debris with an RCS of less than 1 square meter that is not expected to survive reentry through the atmosphere and impact the earth.

Normal Decay Prediction--A decay prediction based on a general perturbations correction applied to an element set of a satellite.

Observation (Ob)--A single detection of a space object by a sensor, in terms of azimuth, elevation, etc. relative to that sensor.

Observation Dispersion--Taking observations at different positions on a satellite's orbital path, to provide the most accurate overall orbit determination.

Observation Regulation--Limiting the number of observations collected on each individual satellite to that which would maintain the accuracy of its element set at an acceptable level.

Operator--The agency which maintains the satellite while in orbit.

OPREP-3 Report--A verbal/hardcopy message report used to immediately notify the National Military Command Center (NMCC) of an event of national-level interest.

Orbit Decay--The gradual reduction of a satellite's orbital altitude due to atmospheric drag.

Owner--The agency or command which ultimately purchased and owns the system.

Owner/Operator--The Space Control term for the owner and/or operator--the designated control center or agency that is the focal point for operational control of a satellite payload, and/or vehicle, and/or ground site. The owner/operator interfaces with SCC and is generally the location where the SCC Owner/ Operator Communications System (SOCS) terminal is located for a given space system.

(S) (b)(1) USSC

(b)(1) USSC

Pre-Planned Launch (PPL)—Pre-Planned Launch. A space launch for which the SCC has received advance information from the launching agency or payload owner about the payload mission, launch profile, and orbital parameters.

Pre-Planned Launch Folder (PPLF)--A folder for the SCC crew which contains the ILAM and other information about an upcoming pre-planned launch.

R-15--A message sent to CMOC/J3 by a launching agency, normally 15 days before launch, giving all the coordination information needed by the SSN to plan for a domestic or cooperative launch.

RA Object--Any payload, rocket body, or platform, or a piece of debris with a RCS of 1 square meter or greater or has a greater than five percent probability of surviving reentry.

RA Prediction--A prediction based on a special perturbations correction applied to an element set, of the time and location where a RA object will reenter into the atmosphere (not impact on the ground). The RA reporting window is expressed as a time interval of + / - 15 minutes, along with the corresponding portion of the object's ground trace between those times.

Reportable Space Launch—When a domestic space launch vehicle, which achieves orbit, goes errant and may impact, overfly or come within 100 nautical miles of the Former Soviet Union (FSU) land mass or other designated area, or which could be perceived as a threat to the FSU.

Satellite Vulnerability (SATVUL)—(NAVSPACECOM's equivalent to SATRAN.)

Separation--The intentional separation of one or more parts or contents of a satellite from the main body. Separations are confirmed by intelligence sources.

SOI--Space Object Identification. The analysis of narrow-band radar data; wide-band radar, photometric and visible/infrared imagery data; and passive radio frequency (RF) sensor data to determine the characteristics of Earth satellites (in terms of size, shape, and motion).

Space Asset--Any element of a space system, including the space surveillance network, the command and control communications links or any facility supporting a space system.

Space Event--A non-routine event involving a space object, such as launch, maneuver, breakup, etc.

Space Event Correlation—The process of determining that specific data received by the SCC (e.g., DSP data) matches specific historical or prediction criteria within a specific error band.

(S) (b)(1) USSC
(b)(1) USSC

Space System--The combination of ground sensor(s), satellite(s), communication link(s), tracking site(s), launch site(s), control station(s) and supporting assets of a major space resource, constellation or network.

Space Track—The collection of radar, optical, and passive radio-frequency data to determine a satellite's position.

(S) (b)(1) USSC

Space Surveillance Network (SSN)—Worldwide network of space surveillance sensors, communications, and data processing/command and control centers.

Tasking Category—A numerical character which sets the priority for taking observations and the transmission precedence.

Tasking Suffix--An alphabetical character that defines the amount of observational data required on a space object and the frequency of data collection.

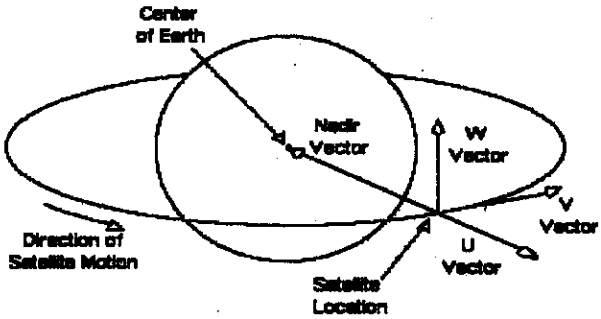
Tracking and Impact Prediction (TIP)--Current term for TIP is Reentry Assessment (RA) but message software has not kept pace with the change.

Uncorrelated Target (UCT)--Any object detected in orbit that cannot be correlated with the orbital elements of any other object in a sensor site's database.

UVW Coordinate System--

Figure A1.1. (U) UVW Coordinte System. (U)

UVW Coordinate System--



Satellite-Centered UVW Coordinate System

--U--Radial vector. A vector in the orbit plane, pointing from the satellite away from the center of the Earth. Positive is in the direction opposite the Earth (opposite nadir). It may be considered as the opposite of a nadir vector that is defined as a vector pointing from the satellite toward the center of the Earth.

--V--In-Track vector. A vector in the orbit plane, perpendicular to the U vector and positive in the direction of satellite motion. Defined by the W vector crossed into the U vector. Note that this vector is close to, but not identical to, the velocity vector.

--W--Cross-Track vector. A vector perpendicular to the orbital plane, parallel to the orbit angular momentum vector. Defined by the U vector crossed into the satellite instantaneous velocity vector. Thus, it is positive to the left of satellite line of travel.

Western Range (WR)--U.S. launch site at Vandenberg AFB, CA.

Attachment 2

SCC MESSAGE REPORT FORMATS (U)

A2.1. (U) MISS REPORT Message (SA19 or ADCCP equivalents).

A2.1.1. (U) Message Text. The message text will consist of only one line, with the fields in **Table A2.1.**

Table A2.1. (U) Message Text Fields. (U)

Sensor number.

Satellite number.

ELSET for satellite on which track was attempted.

Julian day and time track was, or should have been, attempted.

Two-digit "miss code:"

01 = System outage.

02 = Acquisition not attempted.

03 = Acquisition attempted but missed.

04 = Hit, but no (or insufficient) data collected.

Narrative reason for the miss (up to 35 characters long). **NOTE:** If the message format does not allow enough space to adequately explain the reason for the missed pass, send a free-text message or call the SCC to amplify the explanation given.

A2.1.2. (U) Transmission.

Precedence: PRIORITY (Within 3 hours of SCC request)
Classification: Classify as appropriate based on the message content.
From: SCC/ASCC
To: SCC
ASCC
CMOC/J30S
21SW/CP, 21 OSS, or 18 SPSS/CC
HQ AFSPC/AFSPOC
HQ AFSPC/DOYJ

Table A2.2. (U) Sample Format. (U)

	SECRET (When filled in)
**	aaaaaaa(Classification)aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaccl
	SUBJECT: SPADOC NOTIFICATION (U)ccl
	(a) aaa(Real/Test/Exercise Indicator)aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaccl
	aaaaaaa(Passlines)aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaacc l
**	1. (a) MESSAGE TYPE: MISS REPORTccl
	2. (U) PREPARATION DATE TIME: ddhhmmZmmmyyccl
	nnn nnnnn nnnnn dddhh mmss.s nn aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaacl
	DECLASSIFY ON ddmmmyyyyccl
	SECRET (When filled in)

A2.2. (U) ELSET 1 Message (SU73). This message is used to inform the SSN that ELSET 1 has been published on an object, allowing sites to discontinue search procedures and resume normal tracking.

A2.2.1. (U) Transmission.

Precedence: FLASH
Classification: SECRET
From: SCC/ASCC
To: SSN, DEFSMAC, White Sands Missile Range, and HQ AFSPC

Table A2.3. (U) Sample Format. (U)

SECRET (When filled in)

****	aaaaaaa(Classification)aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaccl
	SUBJECT: SPADOC NOTIFICATION (U)ccl
	(a) aaa(Real/Test/Exercise Indicator)aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaccl
	aaaaaaa(Passlines)aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaccl
	1. (a) MESSAGE TYPE: ELSET ONE PUBLICATION (U)ccl
	2. (U) PREPARATION DATE TIME: ddhhmmZmmmnnccl
	3. (a) ELSET ONE FOR SSC NUMBER zzzzn WAS PUBLISHED AT ddd/hhmmZ.ccl
	THE INTERNATIONAL DESIGNATOR IS aaaaaaaaccl
	4. (a) IF FURTHER INFORMATION IS REQUIRED CONTACT THE SSC VIAccl
	MESSAGE OR SECURE VOICE.ccl
	DECLASSIFY ON ddmmmyyyyccl

SECRET (When filled in)

A2.3. (S) (b)(1) USSC

A2.3.1. (U) Description. This message tasks the SSN to search particular volumes of space to attempt to acquire a new non-historic foreign launch or other space object.

A2.3.2. (U) Message Headers.

Precedence: FLASH
Classification: Dependant on message content
From: SCC/ASCC
To: SSN

A2.4. (S) (b)(1) USSC

(b)(1) USSC

A2.4.1. (U) Normal Breakups.

A2.4.1.1. (U) Transmission.

Precedence: IMMEDIATE
Classification: Dependant on message content
From: SCC/ASCC
To: SSN

A2.4.1.2. (U) Sample Possible Breakup Message Format.

Table A2.4. (U) Sample Possible Breakup Message Format. (U)

A possible breakup of SATNO XXXXX has been identified. SCC analyst SATNOs XXXXX to XXXXX are reserved for associated pieces. The following tasking is in effect for the next 96 hours for the parent and associated pieces: *Phased array 2C with a + / - 10 minute search and mechanicals 2C with no search *Phased array and mechanicals 2S (RAs within 48 hours of decay). *Phased array and mechanicals 1S (RAs within 24 hours of decay): Voice reports / head counts are required for the next 96 hours. Refer any questions to the 1 SPCS duty crew in the SCC at DSN 268-4460. Rank, name, 1 SPCS / XXXXXXX Crew sends.

A2.4.1.3. (U) Sample Confirmed Breakup Message Format.

Table A2.5. (U) Sample Confirmed Breakup Message Format. (U)

A confirmed breakup of SCC SATNO XXXXX has been identified. Tasking is as follows: *Use UI 10-40 Fig 7.1 for the appropriate tasking for your sensor. Phased array sensors are to initiate a + / - 15 minute search for the parent object *Phased array and mechanicals 2S (RAs within 48 hours of decay). *Phased array and mechanicals 1S (RAs within 24 hours of decay). POS/NEG voice reports are required to be called in to the SCC duty crew for the next 72 hours. UI 10-40 is in effect until further notice and only applies to sensors with visibility. All other sensors can disregard this message. Please direct all questions during duty hours to the 1 SPCS Space Analysis Center at DSN 268-4566 / 3278. After duty hours refer any questions to the SCC duty crew at DSN 268-4460. Remarks: The analyst satellite range assigned to this breakup is XXXXX through XXXXX. Rank, name, 1 SPCS Breakup Officer sends.

A2.4.1.4. (U) Sample Breakup Cancellation Message Format.

Table A2.6. (U) Sample Breakup Cancellation Message Format. (U)

The breakup of SCC SATNO XXXXX has been cancelled. Terminate all breakup procedures for this object. Resume normal tasking. Rank, name, 1 SPCS / XXXXXXX Crew sends.

NOTE: * Leave in appropriate tasking and delete non-applicable information.

Attachment 3

SATELLITE NUMBERING SCHEME (U)

Table A3.1. (U) Satellite Numbering Scheme. (U)

SATELLITE NO	USE
00001 - 69999	Cataloged Satellites
70000 - 74999	Pre-planned Launches (before being cataloged)
75000 - 76999	New Foreign Launches (before being cataloged)
77000 - 78999	New Foreign Launch Historic Folders
79000 - 79999	Special Processing
80000 - 80999	Breakup Processing
81000 - 81999	1 SPCS/NAV UCT Processing
82000 - 82124	SCC Crew Use
82125 - 82499	CMOC/J3SX (Combat Analysis) Use
82500 - 82999	CMOC/J3SX (Special Analysis Vault) Use
83000 - 83099	Sensor Search Tasking (Pointer ELSETs)
83100 - 83499	CMOC/J3SX Use
83500 - 83899	Deep Space UCT Processing
83900 - 85999	Reserved for Site Unidentified Satellites as directed by 1 SPCS
86000 - 86999	CMOC/J3SX Use
87000 - 88999	NAV ELSETs
89000 - 89949	Reserved for GEODSS Search Processing as directed by 1 SPCS
89950 - 89999	Classified NAV Fence ELSETs

Attachment 4

SSN VOICE REPORT FORMATS (U)

Table A4.1. (U) POS/NEG Voice Report Format. (U)

"This is _____(site) with a POS/NEG voice report.
SCC or analyst satellite number (or folder/search plan number(s) tasked if applicable to NEG acquisition).
ELSET number, if applicable.
Start and stop time of the pass.
Time Off Element Set (TOES) [or Degrees Off Element Set (DOES) for optical sites.]
Headcount. (Optical sensors report approximate size of piece cluster in degrees.)
Reason for miss (if negative acquisition), in words rather than a code.
If applicable, ask for a retransmission of a current ELSET or direction for retagging and follow-on tasking.

Table A4.2. (U) Critical UCT Voice Report. (U)

"This is _____(site) with a Critical UCT voice report.
Headcount.
UCT object number(s) assigned by site.
Start and stop times of track.
Piece type(s), if available.
Orbital period.
Inclination.
Historic launch folder correlation and TOES/DOES relative to that folder, or "no folder correlation."

Table A4.3. (U) Breakup Reporting. (U)

"This is _____(site) with a Multiple Headcount voice report.
Parent satellite (if possible)
First and Last TOES.
Orbital period.
Inclination.
Headcount.
RCS of largest piece
Time of Pass
Range of UCT object number(s) assigned by site.

Table A4.4. (U) EODET Voice Report. (U)

Acquisition.
Maximum elevation, culmination, or midpoint of pass (whichever applies to system type).
Track termination or last data point.
Pass the following data at each of these times:
Object number.
Observation time.
Elevation.
Azimuth.
Range.
Range rate (if applicable).
Other remarks if applicable.

Attachment 5

LAUNCH PROCESSING (U)

A5.1. (S) (b)(1) USSC

A5.1.1. (U) Transmission.

Precedence: FLASH
Classification: SECRET
From: SCC/ASCC
To: Selected SSN sites.

Table A5.1. (U) Sample Format. (U)

SECRET (When filled in)
SUBJECT: POI ALERT NOTIFICATION (U)
(S) LAUNCH SITE:
(S) BOOSTER:
(S) (b)(1) USSC
(S) (b)(1) USSC
(S) REMARKS: [Payload, if known, or any other necessary amplifying data].
DECLASSIFY ON: ddmmmyyyy (Date of Event plus 10 years)
SECRET (When filled in)

A5.2. (S) (b)(1) USSC

A5.2.1. (U) Description. This message is used to notify the SSN immediately upon receipt of any DSP Missile Launch message.

A5.2.2. (U) Transmission.

Precedence: FLASH
Classification: SECRET
From: SCC/ASCC
To: SSN.

A5.3. (S) (b)(1) USSC

A5.3.1. (U) Description. This message is used to inform tasked sites to terminate their ANCHOR search procedures.

A5.3.2. (U) Transmission.

Precedence: FLASH [or IMMEDIATE]
Classification: SECRET
From: SCC/ASCC
To: SSN.

A5.4. (S) (b)(1) USSC

A5.4.1. (U) Description. This message is used to notify the SSN that a historic new foreign launch has occurred and direct search on selected historic launch folders.

A5.4.2. (U) Transmission.

Precedence: FLASH
Classification: SECRET
From: SCC/ASCC
To: SSN and DEFSMAC

A5.5. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

A5.5.1. (U) Transmission.

Precedence: FLASH
Classification: SECRET
From: SCC/ASCC
To: SSN.

Table A5.2. (U) Sample Format. (U)

SECRET (When filled in)
SUBJECT: POSSIBLE NON-HISTORIC FOREIGN SPACE LAUNCH (U) ( ) A NON-HISTORIC LAUNCH IS BELIEVED TO HAVE OCCURRED AT APPROXIMATELY DDHHMMZ MON YY FROM (Location of Launch Site) ON AN AZIMUTH OF XX.X DEGREES, WITH AN INCLINATION OF XX.X DEGREES. (U) DO NOT DISCUSS FOLDERS OVER UNSECURE TELEPHONE LINES UNLESS THE INITIATED BY THE SCC. (U) COMPLY WITH SSN/SPADOC 4C SCGs AND UI10-40. ( ) AMPLIFYING TEXT AS APPROPRIATE. DECLASSIFY ON: ddmmmyyyy (Date of Event plus 10 years)
SECRET (When filled in)

A5.6. (S) (b)(1) USSC

A5.6.1. (U) Initial Report.

A5.6.1.1. ~~(S)~~ Voice Template: (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

A5.6.1.2. ~~(S)~~ Message Template: (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

A5.6.2. (U) Site Track Report.

A5.6.2.1. (U) Voice Template:

A5.6.2.1.1. ~~(S)~~ For positive track report: (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

A5.6.2.1.2. ~~(S)~~ For negative track report: (b)(1) USSC
(b)(1) USSC

A5.6.2.1.2.1. ~~(S)~~ First or second negative track: (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

A5.6.2.1.2.2. (U) Third negative track: USSTRATCOM believes this to be a failed space launch. Pending questions NORAD and USSTRATCOM complete."

A5.6.2.2. (U) Message Template.

A5.6.2.2.1. ~~(S)~~ For positive track report: (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

A5.6.2.2.2. ~~(S)~~ For negative track report: (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

A5.6.2.2.2.1. ~~(S)~~ If first or second negative track, add the following: (b)(1) USSC
(b)(1) USSC

A5.6.2.2.2.2. (U) If third negative track, add the following: "USSTRATCOM BELIEVES THIS TO BE A FAILED SPACE LAUNCH. THIS COMPLETES USSTRATCOM THEATER SPACE LAUNCH REPORTING OF THIS EVENT."

A5.6.3. (U) Theater Notification of ELSET 1 Publication.

A5.6.3.1. ~~(S)~~ Voice Report: (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

A5.6.3.2. ~~(S)~~ Message Report: (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

Attachment 6

LAUNCH MATERIALS (U)

A6.1. (U) Launch Folder Numbering Convention. Each launch folder is assigned a unique 5-digit number as follows:

A6.1.1. (U) The first 2 digits will always be "77" or "78", indicating an historic NFL folder number (as shown in **Attachment 3**).

A6.1.2. (U) The middle 3 digits (ranging from 700-899) identify the specific folder. These 3 numbers are what will be tasked to sensor sites. This numbering scheme allows for 200 unique foreign launch folders; if a folder becomes obsolete, AFMAN 37-139, Table 10-12 and Rules 17-19 identifies the retention and disposition periods for launch information, depending on launch type.

A6.1.3. (U) The last digit (0 - 9) indicates a particular orbit segment of the folder. For instance, 0 may be the parking orbit, 1 the transfer orbit, and 2, 3 and 4 different final orbits. Examples of boosters that may require the use of multiple orbit segments include SL-06, SL-08, SL-11, SL-12 and SL-14.

A6.1.4. (U) As an example, folder 762 is tasked to the SSN. The first site to track reports a correlation to 77620, which tells the SCC that the object is in parking orbit. A later site correlates its track to 77621, which is the transfer orbit, and so on.

A6.2. (U) Azimuth to Inclination Mathematical Method. One facet of orbital mechanics is the relationship between the location of the launch site (latitude), the launch azimuth (direction the booster takes upon leaving the launch pad relative to true north), and the resulting inclination of the spacecraft's final orbit. This restriction arises from the fact that the center of the earth must be in the orbital plane. It also means that the resulting inclination is equal to or greater than the launch site latitude.

A6.2.1. (U) Using a calculator, the formula for converting the launch azimuth to the inclination of the orbital plane is:

inclination = COS^{-1} [COS (Launch site latitude) * SIN (azimuth)],

(U) **NOTE:** Launch site latitude (north or south is irrelevant just put in the number) and azimuth = launch azimuth, measured in degrees from true north in a clockwise direction from the launch site.

(U) Example: The Shuttle is launched from Cape Canaveral (latitude = 28.3 deg) on an azimuth of 45 deg. Making the appropriate substitutions, the equation becomes:

inclination = COS^{-1} [COS (Launch site latitude) * SIN (azimuth)]

inclination = COS^{-1} [COS (28.3) * SIN (45)]

inclination = COS^{-1} [(0.8805) * (0.7071)]

inclination = COS^{-1}[(0.6226)]

inclination = 51.49

A6.2.2. (U) Take advantage of MS Excel program by using use the following equation:

=ACOS((COS (LAT*PI()/180)*SIN(AZ*PI()/180)))*180/PI()

Where LAT is the Launch Site Latitude and AZ is the Launch Site Azimuth.

Using example from above: =ACOS((COS (**28.3***PI()/180)*SIN(**45***PI()/180)))*180/PI()

Inclination = 51.49437

(U) **NOTE:** Launch site latitude (north or south is irrelevant just put in the number) and azimuth is the launch azimuth, measured in degrees from true north in a clockwise direction from the launch site.

A6.3. (U) Azimuth Conversion to Inclination Look-Up Tables. See the following tables.

Table A6.1. (U) TYURATAM (N63.0, E040.5). (U)

LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL
1	89.3	37	65.3	73	48.4	109	48.9	145	66.5	181	90.7	217	114.7	253	131.6	289	131.1	325	113.5
2	88.6	38	64.7	74	48.1	110	49.2	146	67.1	182	91.4	218	115.3	254	131.9	290	130.8	326	112.9
3	87.9	39	64.1	75	47.9	111	49.6	147	67.8	183	92.1	219	115.9	255	132.1	291	130.4	327	112.2
4	87.2	40	63.5	76	47.6	112	49.9	148	68.4	184	92.8	220	116.5	256	132.4	292	130.1	328	111.6
5	86.5	41	62.9	77	47.4	113	50.3	149	69.0	185	93.5	221	117.1	257	132.6	293	129.7	329	111.0
6	85.8	42	62.3	78	47.2	114	50.6	150	69.7	186	94.2	222	117.7	258	132.8	294	129.4	330	110.3
7	85.1	43	61.7	79	47.0	115	51.0	151	70.3	187	94.9	223	118.3	259	133.0	295	129.0	331	109.7
8	84.5	44	61.1	80	46.8	116	51.4	152	71.0	188	95.5	224	118.9	260	133.2	296	128.6	332	109.0
9	83.8	45	60.6	81	46.7	117	51.8	153	71.6	189	96.2	225	119.4	261	133.3	297	128.2	333	108.4
10	83.1	46	60.0	82	46.5	118	52.2	154	72.3	190	96.9	226	120.0	262	133.5	298	127.8	334	107.7
11	82.4	47	59.5	83	46.4	119	52.6	155	72.9	191	97.6	227	120.5	263	133.6	299	127.4	335	107.1
12	81.7	48	58.9	84	46.3	120	53.0	156	73.6	192	98.3	228	121.1	264	133.7	300	127.0	336	106.4
13	81.0	49	58.4	85	46.2	121	53.5	157	74.3	193	99.0	229	121.6	265	133.8	301	126.5	337	105.7
14	80.3	50	57.8	86	46.1	122	53.9	158	74.9	194	99.7	230	122.2	266	133.9	302	126.1	338	105.1
15	79.6	51	57.3	87	46.1	123	54.4	159	75.6	195	100.4	231	122.7	267	133.9	303	125.6	339	104.4
16	79.0	52	56.8	88	46.0	124	54.8	160	76.3	196	101.0	232	123.2	268	134.0	304	125.2	340	103.7
17	78.3	53	56.3	89	46.0	125	55.3	161	76.9	197	101.7	233	123.7	269	134.0	305	124.7	341	103.1
18	77.6	54	55.8	90	46.0	126	55.8	162	77.6	198	102.4	234	124.2	270	134.0	306	124.2	342	102.4
19	76.9	55	55.3	91	46.0	127	56.3	163	78.3	199	103.1	235	124.7	271	134.0	307	123.7	343	101.7
20	76.3	56	54.8	92	46.0	128	56.8	164	79.0	200	103.7	236	125.2	272	134.0	308	123.2	344	101.0
21	75.6	57	54.4	93	46.1	129	57.3	165	79.6	201	104.4	237	125.6	273	133.9	309	122.7	345	100.4

22	74.9	58	53.9	94	46.1	130	57.8	166	80.3	202	105.1	238	126.1	274	133.9	310	122.2	346	99.7
23	74.3	59	53.5	95	46.2	131	58.4	167	81.0	203	105.7	239	126.5	275	133.8	311	121.6	347	99.0
24	73.6	60	53.0	96	46.3	132	58.9	168	81.7	204	106.4	240	127.0	276	133.7	312	121.1	348	98.3
25	72.9	61	52.6	97	46.4	133	59.5	169	82.4	205	107.1	241	127.4	277	133.6	313	120.5	349	97.6
26	72.3	62	52.2	98	46.5	134	60.0	170	83.1	206	107.7	242	127.8	278	133.5	314	120.0	350	96.9
27	71.6	63	51.8	99	46.7	135	60.6	171	83.8	207	108.4	243	128.2	279	133.3	315	119.4	351	96.2
28	71.0	64	51.4	100	46.8	136	61.1	172	84.5	208	109.0	244	128.6	280	133.2	316	118.9	352	95.5
29	70.3	65	51.0	101	47.0	137	61.7	173	85.1	209	109.7	245	129.0	281	133.0	317	118.3	353	94.9
30	69.7	66	50.6	102	47.2	138	62.3	174	85.8	210	110.3	246	129.4	282	132.8	318	117.7	354	94.2
31	69.0	67	50.3	103	47.4	139	62.9	175	86.5	211	111.0	247	129.7	283	132.6	319	117.1	355	93.5
32	68.4	68	49.9	104	47.6	140	63.5	176	87.2	212	111.6	248	130.1	284	132.4	320	116.5	356	92.8
33	67.8	69	49.6	105	47.9	141	64.1	177	87.9	213	112.2	249	130.4	285	132.1	321	115.9	357	92.1
34	67.1	70	49.2	106	48.1	142	64.7	178	88.6	214	112.9	250	130.8	286	131.9	322	115.3	358	91.4
35	66.5	71	48.9	107	48.4	143	65.3	179	89.3	215	113.5	251	131.1	287	131.6	323	114.7	359	90.7
36	65.9	72	48.6	108	48.6	144	65.9	180	90.0	216	114.1	252	131.4	288	131.4	324	114.1	360	90.0

Table A6.2. (U) PLESETSK (N63.0, E040.5). (U)

LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL
1	89.5	37	74.1	73	64.3	109	64.6	145	74.9	181	90.5	217	105.9	253	115.7	289	115.4	325	105.1
2	89.1	38	73.8	74	64.1	110	64.7	146	75.3	182	90.9	218	106.2	254	115.9	290	115.3	326	104.7
3	88.6	39	73.4	75	64.0	111	64.9	147	75.7	183	91.4	219	106.6	255	116.0	291	115.1	327	104.3
4	88.2	40	73.0	76	63.9	112	65.1	148	76.1	184	91.8	220	107.0	256	116.1	292	114.9	328	103.9
5	87.7	41	72.7	77	63.7	113	65.3	149	76.5	185	92.3	221	107.3	257	116.3	293	114.7	329	103.5
6	87.3	42	72.3	78	63.6	114	65.5	150	76.9	186	92.7	222	107.7	258	116.4	294	114.5	330	103.1
7	86.8	43	72.0	79	63.5	115	65.7	151	77.3	187	93.2	223	108.0	259	116.5	295	114.3	331	102.7
8	86.4	44	71.6	80	63.4	116	65.9	152	77.7	188	93.6	224	108.4	260	116.6	296	114.1	332	102.3
9	85.9	45	71.3	81	63.4	117	66.1	153	78.1	189	94.1	225	108.7	261	116.6	297	113.9	333	101.9
10	85.5	46	70.9	82	63.3	118	66.4	154	78.5	190	94.5	226	109.1	262	116.7	298	113.6	334	101.5
11	85.0	47	70.6	83	63.2	119	66.6	155	78.9	191	95.0	227	109.4	263	116.8	299	113.4	335	101.1
12	84.6	48	70.3	84	63.2	120	66.8	156	79.4	192	95.4	228	109.7	264	116.8	300	113.2	336	100.6
13	84.1	49	70.0	85	63.1	121	67.1	157	79.8	193	95.9	229	110.0	265	116.9	301	112.9	337	100.2
14	83.7	50	69.6	86	63.1	122	67.4	158	80.2	194	96.3	230	110.4	266	116.9	302	112.6	338	99.8
15	83.3	51	69.3	87	63.0	123	67.6	159	80.6	195	96.7	231	110.7	267	117.0	303	112.4	339	99.4
16	82.8	52	69.0	88	63.0	124	67.9	160	81.1	196	97.2	232	111.0	268	117.0	304	112.1	340	98.9
17	82.4	53	68.7	89	63.0	125	68.2	161	81.5	197	97.6	233	111.3	269	117.0	305	111.8	341	98.5
18	81.9	54	68.5	90	63.0	126	68.5	162	81.9	198	98.1	234	111.5	270	117.0	306	111.5	342	98.1
19	81.5	55	68.2	91	63.0	127	68.7	163	82.4	199	98.5	235	111.8	271	117.0	307	111.3	343	97.6
20	81.1	56	67.9	92	63.0	128	69.0	164	82.8	200	98.9	236	112.1	272	117.0	308	111.0	344	97.2
21	80.6	57	67.6	93	63.0	129	69.3	165	83.3	201	99.4	237	112.4	273	117.0	309	110.7	345	96.7

22	80.2	58	67.4	94	63.1	130	69.6	166	83.7	202	99.8	238	112.6	274	116.9	310	110.4	346	96.3
23	79.8	59	67.1	95	63.1	131	70.0	167	84.1	203	100.2	239	112.9	275	116.9	311	110.0	347	95.9
24	79.4	60	66.8	96	63.2	132	70.3	168	84.6	204	100.6	240	113.2	276	116.8	312	109.7	348	95.4
25	78.9	61	66.6	97	63.2	133	70.6	169	85.0	205	101.1	241	113.4	277	116.8	313	109.4	349	95.0
26	78.5	62	66.4	98	63.3	134	70.9	170	85.5	206	101.5	242	113.6	278	116.7	314	109.1	350	94.5
27	78.1	63	66.1	99	63.4	135	71.3	171	85.9	207	101.9	243	113.9	279	116.6	315	108.7	351	94.1
28	77.7	64	65.9	100	63.4	136	71.6	172	86.4	208	102.3	244	114.1	280	116.6	316	108.4	352	93.6
29	77.3	65	65.7	101	63.5	137	72.0	173	86.8	209	102.7	245	114.3	281	116.5	317	108.0	353	93.2
30	76.9	66	65.5	102	63.6	138	72.3	174	87.3	210	103.1	246	114.5	282	116.4	318	107.7	354	92.7
31	76.5	67	65.3	103	63.7	139	72.7	175	87.7	211	103.5	247	114.7	283	116.3	319	107.3	355	92.3
32	76.1	68	65.1	104	63.9	140	73.0	176	88.2	212	103.9	248	114.9	284	116.1	320	107.0	356	91.8
33	75.7	69	64.9	105	64.0	141	73.4	177	88.6	213	104.3	249	115.1	285	116.0	321	106.6	357	91.4
34	75.3	70	64.7	106	64.1	142	73.8	178	89.1	214	104.7	250	115.3	286	115.9	322	106.2	358	90.9
35	74.9	71	64.6	107	64.3	143	74.1	179	89.5	215	105.1	251	115.4	287	115.7	323	105.9	359	90.5
36	74.5	72	64.4	108	64.4	144	74.5	180	90.0	216	105.5	252	115.6	288	115.6	324	105.5	360	90.0

Table A6.3. (U) KAPUSTIN YAR (N48.5, E046.0). (U)

LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH	
AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL
1	89.3	37	66.5	73	50.7	109	51.2	145	67.7	181	90.7	217	113.5	253	129.3	289	128.8	325	112.3
2	88.7	38	65.9	74	50.4	110	51.5	146	68.3	182	91.3	218	114.1	254	129.6	290	128.5	326	111.7
3	88.0	39	65.4	75	50.2	111	51.8	147	68.8	183	92.0	219	114.6	255	129.8	291	128.2	327	111.2
4	87.4	40	64.8	76	50.0	112	52.1	148	69.4	184	92.6	220	115.2	256	130.0	292	127.9	328	110.6
5	86.7	41	64.2	77	49.8	113	52.4	149	70.0	185	93.3	221	115.8	257	130.2	293	127.6	329	110.0

6	86.0	42	63.7	78	49.6	114	52.7	150	70.7	186	94.0	222	116.3	258	130.4	294	127.3	330	109.3
7	85.4	43	63.1	79	49.4	115	53.1	151	71.3	187	94.6	223	116.9	259	130.6	295	126.9	331	108.7
8	84.7	44	62.6	80	49.3	116	53.4	152	71.9	188	95.3	224	117.4	260	130.7	296	126.6	332	108.1
9	84.1	45	62.1	81	49.1	117	53.8	153	72.5	189	95.9	225	117.9	261	130.9	297	126.2	333	107.5
10	83.4	46	61.5	82	49.0	118	54.2	154	73.1	190	96.6	226	118.5	262	131.0	298	125.8	334	106.9
11	82.7	47	61.0	83	48.9	119	54.6	155	73.7	191	97.3	227	119.0	263	131.1	299	125.4	335	106.3
12	82.1	48	60.5	84	48.8	120	55.0	156	74.4	192	97.9	228	119.5	264	131.2	300	125.0	336	105.6
13	81.4	49	60.0	85	48.7	121	55.4	157	75.0	193	98.6	229	120.0	265	131.3	301	124.6	337	105.0
14	80.8	50	59.5	86	48.6	122	55.8	158	75.6	194	99.2	230	120.5	266	131.4	302	124.2	338	104.4
15	80.1	51	59.0	87	48.6	123	56.2	159	76.3	195	99.9	231	121.0	267	131.4	303	123.8	339	103.7
16	79.5	52	58.5	88	48.5	124	56.7	160	76.9	196	100.5	232	121.5	268	131.5	304	123.3	340	103.1
17	78.8	53	58.0	89	48.5	125	57.1	161	77.5	197	101.2	233	122.0	269	131.5	305	122.9	341	102.5
18	78.2	54	57.6	90	48.5	126	57.6	162	78.2	198	101.8	234	122.4	270	131.5	306	122.4	342	101.8
19	77.5	55	57.1	91	48.5	127	58.0	163	78.8	199	102.5	235	122.9	271	131.5	307	122.0	343	101.2
20	76.9	56	56.7	92	48.5	128	58.5	164	79.5	200	103.1	236	123.3	272	131.5	308	121.5	344	100.5
21	76.3	57	56.2	93	48.6	129	59.0	165	80.1	201	103.7	237	123.8	273	131.4	309	121.0	345	99.9
22	75.6	58	55.8	94	48.6	130	59.5	166	80.8	202	104.4	238	124.2	274	131.4	310	120.5	346	99.2
23	75.0	59	55.4	95	48.7	131	60.0	167	81.4	203	105.0	239	124.6	275	131.3	311	120.0	347	98.6
24	74.4	60	55.0	96	48.8	132	60.5	168	82.1	204	105.6	240	125.0	276	131.2	312	119.5	348	97.9
25	73.7	61	54.6	97	48.9	133	61.0	169	82.7	205	106.3	241	125.4	277	131.1	313	119.0	349	97.3
26	73.1	62	54.2	98	49.0	134	61.5	170	83.4	206	106.9	242	125.8	278	131.0	314	118.5	350	96.6
27	72.5	63	53.8	99	49.1	135	62.1	171	84.1	207	107.5	243	126.2	279	130.9	315	117.9	351	95.9
28	71.9	64	53.4	100	49.3	136	62.6	172	84.7	208	108.1	244	126.6	280	130.7	316	117.4	352	95.3

29	71.3	65	53.1	101	49.4	137	63.1	173	85.4	209	108.7	245	126.9	281	130.6	317	116.9	353	94.6
30	70.7	66	52.7	102	49.6	138	63.7	174	86.0	210	109.3	246	127.3	282	130.4	318	116.3	354	94.0
31	70.0	67	52.4	103	49.8	139	64.2	175	86.7	211	110.0	247	127.6	283	130.2	319	115.8	355	93.3
32	69.4	68	52.1	104	50.0	140	64.8	176	87.4	212	110.6	248	127.9	284	130.0	320	115.2	356	92.6
33	68.8	69	51.8	105	50.2	141	65.4	177	88.0	213	111.2	249	128.2	285	129.8	321	114.6	357	92.0
34	68.3	70	51.5	106	50.4	142	65.9	178	88.7	214	111.7	250	128.5	286	129.6	322	114.1	358	91.3
35	67.7	71	51.2	107	50.7	143	66.5	179	89.3	215	112.3	251	128.8	287	129.3	323	113.5	359	90.7
36	67.1	72	50.9	108	50.9	144	67.1	180	90.0	216	112.9	252	129.1	288	129.1	324	112.9	360	90.0

Table A6.4. (U) JIUQUAN (N41.5, E100.3). (U)

LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH	
AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL
1	89.3	37	63.2	73	44.3	109	44.9	145	64.6	181	90.7	217	116.8	253	135.7	289	135.1	325	115.4
2	88.5	38	62.5	74	44.0	110	45.3	146	65.2	182	91.5	218	117.5	254	136.0	290	134.7	326	114.8
3	87.8	39	61.9	75	43.7	111	45.6	147	65.9	183	92.2	219	118.1	255	136.3	291	134.4	327	114.1
4	87.0	40	61.2	76	43.4	112	46.0	148	66.6	184	93.0	220	118.8	256	136.6	292	134.0	328	113.4
5	86.3	41	60.6	77	43.1	113	46.4	149	67.3	185	93.7	221	119.4	257	136.9	293	133.6	329	112.7
6	85.5	42	59.9	78	42.9	114	46.8	150	68.0	186	94.5	222	120.1	258	137.1	294	133.2	330	112.0
7	84.8	43	59.3	79	42.7	115	47.3	151	68.7	187	95.2	223	120.7	259	137.3	295	132.7	331	111.3
8	84.0	44	58.6	80	42.5	116	47.7	152	69.4	188	96.0	224	121.4	260	137.5	296	132.3	332	110.6
9	83.3	45	58.0	81	42.3	117	48.1	153	70.1	189	96.7	225	122.0	261	137.7	297	131.9	333	109.9
10	82.5	46	57.4	82	42.1	118	48.6	154	70.8	190	97.5	226	122.6	262	137.9	298	131.4	334	109.2
11	81.8	47	56.8	83	42.0	119	49.1	155	71.5	191	98.2	227	123.2	263	138.0	299	130.9	335	108.5
12	81.0	48	56.2	84	41.9	120	49.6	156	72.3	192	99.0	228	123.8	264	138.1	300	130.4	336	107.7
13	80.3	49	55.6	85	41.7	121	50.1	157	73.0	193	99.7	229	124.4	265	138.3	301	129.9	337	107.0
14	79.6	50	55.0	86	41.7	122	50.6	158	73.7	194	100.4	230	125.0	266	138.3	302	129.4	338	106.3
15	78.8	51	54.4	87	41.6	123	51.1	159	74.4	195	101.2	231	125.6	267	138.4	303	128.9	339	105.6
16	78.1	52	53.8	88	41.5	124	51.6	160	75.2	196	101.9	232	126.2	268	138.5	304	128.4	340	104.8
17	77.4	53	53.3	89	41.5	125	52.2	161	75.9	197	102.6	233	126.7	269	138.5	305	127.8	341	104.1
18	76.6	54	52.7	90	41.5	126	52.7	162	76.6	198	103.4	234	127.3	270	138.5	306	127.3	342	103.4
19	75.9	55	52.2	91	41.5	127	53.3	163	77.4	199	104.1	235	127.8	271	138.5	307	126.7	343	102.6
20	75.2	56	51.6	92	41.5	128	53.8	164	78.1	200	104.8	236	128.4	272	138.5	308	126.2	344	101.9
21	74.4	57	51.1	93	41.6	129	54.4	165	78.8	201	105.6	237	128.9	273	138.4	309	125.6	345	101.2

22	73.7	58	50.6	94	41.7	130	55.0	166	79.6	202	106.3	238	129.4	274	138.3	310	125.0	346	100.4
23	73.0	59	50.1	95	41.7	131	55.6	167	80.3	203	107.0	239	129.9	275	138.3	311	124.4	347	99.7
24	72.3	60	49.6	96	41.9	132	56.2	168	81.0	204	107.7	240	130.4	276	138.1	312	123.8	348	99.0
25	71.5	61	49.1	97	42.0	133	56.8	169	81.8	205	108.5	241	130.9	277	138.0	313	123.2	349	98.2
26	70.8	62	48.6	98	42.1	134	57.4	170	82.5	206	109.2	242	131.4	278	137.9	314	122.6	350	97.5
27	70.1	63	48.1	99	42.3	135	58.0	171	83.3	207	109.9	243	131.9	279	137.7	315	122.0	351	96.7
28	69.4	64	47.7	100	42.5	136	58.6	172	84.0	208	110.6	244	132.3	280	137.5	316	121.4	352	96.0
29	68.7	65	47.3	101	42.7	137	59.3	173	84.8	209	111.3	245	132.7	281	137.3	317	120.7	353	95.2
30	68.0	66	46.8	102	42.9	138	59.9	174	85.5	210	112.0	246	133.2	282	137.1	318	120.1	354	94.5
31	67.3	67	46.4	103	43.1	139	60.6	175	86.3	211	112.7	247	133.6	283	136.9	319	119.4	355	93.7
32	66.6	68	46.0	104	43.4	140	61.2	176	87.0	212	113.4	248	134.0	284	136.6	320	118.8	356	93.0
33	65.9	69	45.6	105	43.7	141	61.9	177	87.8	213	114.1	249	134.4	285	136.3	321	118.1	357	92.2
34	65.2	70	45.3	106	44.0	142	62.5	178	88.5	214	114.8	250	134.7	286	136.0	322	117.5	358	91.5
35	64.6	71	44.9	107	44.3	143	63.2	179	89.3	215	115.4	251	135.1	287	135.7	323	116.8	359	90.7
36	63.9	72	44.6	108	44.6	144	63.9	180	90.0	216	116.1	252	135.4	288	135.4	324	116.1	360	90.0

Table A6.5. (U) XICHANG (N28.5, E102.0). (U)

LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL
1	89.1	37	58.1	73	32.8	109	33.8	145	59.7	181	90.9	217	121.9	253	147.2	289	146.2	325	120.3
2	88.2	38	57.2	74	32.4	110	34.3	146	60.6	182	91.8	218	122.8	254	147.6	290	145.7	326	119.4
3	87.4	39	56.4	75	31.9	111	34.9	147	61.4	183	92.6	219	123.6	255	148.1	291	145.1	327	118.6
4	86.5	40	55.6	76	31.5	112	35.4	148	62.2	184	93.5	220	124.4	256	148.5	292	144.6	328	117.8
5	85.6	41	54.8	77	31.1	113	36.0	149	63.1	185	94.4	221	125.2	257	148.9	293	144.0	329	116.9
6	84.7	42	54.0	78	30.7	114	36.6	150	63.9	186	95.3	222	126.0	258	149.3	294	143.4	330	116.1
7	83.9	43	53.2	79	30.4	115	37.2	151	64.8	187	96.1	223	126.8	259	149.6	295	142.8	331	115.2
8	83.0	44	52.4	80	30.1	116	37.8	152	65.6	188	97.0	224	127.6	260	149.9	296	142.2	332	114.4
9	82.1	45	51.6	81	29.8	117	38.5	153	66.5	189	97.9	225	128.4	261	150.2	297	141.5	333	113.5
10	81.2	46	50.8	82	29.5	118	39.1	154	67.3	190	98.8	226	129.2	262	150.5	298	140.9	334	112.7
11	80.3	47	50.0	83	29.3	119	39.8	155	68.2	191	99.7	227	130.0	263	150.7	299	140.2	335	111.8
12	79.5	48	49.2	84	29.1	120	40.4	156	69.1	192	100.5	228	130.8	264	150.9	300	139.6	336	110.9
13	78.6	49	48.5	85	28.9	121	41.1	157	69.9	193	101.4	229	131.5	265	151.1	301	138.9	337	110.1
14	77.7	50	47.7	86	28.8	122	41.8	158	70.8	194	102.3	230	132.3	266	151.2	302	138.2	338	109.2
15	76.9	51	46.9	87	28.6	123	42.5	159	71.6	195	103.1	231	133.1	267	151.4	303	137.5	339	108.4
16	76.0	52	46.2	88	28.6	124	43.2	160	72.5	196	104.0	232	133.8	268	151.4	304	136.8	340	107.5
17	75.1	53	45.4	89	28.5	125	44.0	161	73.4	197	104.9	233	134.6	269	151.5	305	136.0	341	106.6
18	74.2	54	44.7	90	28.5	126	44.7	162	74.2	198	105.8	234	135.3	270	151.5	306	135.3	342	105.8
19	73.4	55	44.0	91	28.5	127	45.4	163	75.1	199	106.6	235	136.0	271	151.5	307	134.6	343	104.9
20	72.5	56	43.2	92	28.6	128	46.2	164	76.0	200	107.5	236	136.8	272	151.4	308	133.8	344	104.0
21	71.6	57	42.5	93	28.6	129	46.9	165	76.9	201	108.4	237	137.5	273	151.4	309	133.1	345	103.1

22	70.8	58	41.8	94	28.8	130	47.7	166	77.7	202	109.2	238	138.2	274	151.2	310	132.3	346	102.3
23	69.9	59	41.1	95	28.9	131	48.5	167	78.6	203	110.1	239	138.9	275	151.1	311	131.5	347	101.4
24	69.1	60	40.4	96	29.1	132	49.2	168	79.5	204	110.9	240	139.6	276	150.9	312	130.8	348	100.5
25	68.2	61	39.8	97	29.3	133	50.0	169	80.3	205	111.8	241	140.2	277	150.7	313	130.0	349	99.7
26	67.3	62	39.1	98	29.5	134	50.8	170	81.2	206	112.7	242	140.9	278	150.5	314	129.2	350	98.8
27	66.5	63	38.5	99	29.8	135	51.6	171	82.1	207	113.5	243	141.5	279	150.2	315	128.4	351	97.9
28	65.6	64	37.8	100	30.1	136	52.4	172	83.0	208	114.4	244	142.2	280	149.9	316	127.6	352	97.0
29	64.8	65	37.2	101	30.4	137	53.2	173	83.9	209	115.2	245	142.8	281	149.6	317	126.8	353	96.1
30	63.9	66	36.6	102	30.7	138	54.0	174	84.7	210	116.1	246	143.4	282	149.3	318	126.0	354	95.3
31	63.1	67	36.0	103	31.1	139	54.8	175	85.6	211	116.9	247	144.0	283	148.9	319	125.2	355	94.4
32	62.2	68	35.4	104	31.5	140	55.6	176	86.5	212	117.8	248	144.6	284	148.5	320	124.4	356	93.5
33	61.4	69	34.9	105	31.9	141	56.4	177	87.4	213	118.6	249	145.1	285	148.1	321	123.6	357	92.6
34	60.6	70	34.3	106	32.4	142	57.2	178	88.2	214	119.4	250	145.7	286	147.6	322	122.8	358	91.8
35	59.7	71	33.8	107	32.8	143	58.1	179	89.1	215	120.3	251	146.2	287	147.2	323	121.9	359	90.9
36	58.9	72	33.3	108	33.3	144	58.9	180	90.0	216	121.1	252	146.7	288	146.7	324	121.1	360	90.0

Table A6.6. (U) WUZHAI (N37.52, E112.33). (U)

LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL	LAUNCH AZ	LAUNCH INCL
1	89.2	37	61.5	73	40.7	109	41.4	145	62.9	181	90.8	217	118.5	253	139.3	289	138.6	325	117.1
2	88.4	38	60.8	74	40.3	110	41.8	146	63.7	182	91.6	218	119.2	254	139.7	290	138.2	326	116.3
3	87.6	39	60.1	75	40.0	111	42.2	147	64.4	183	92.4	219	119.9	255	140.0	291	137.8	327	115.6
4	86.8	40	59.3	76	39.7	112	42.7	148	65.1	184	93.2	220	120.7	256	140.3	292	137.3	328	114.9
5	86.0	41	58.6	77	39.4	113	43.1	149	65.9	185	94.0	221	121.4	257	140.6	293	136.9	329	114.1
6	85.2	42	57.9	78	39.1	114	43.6	150	66.6	186	94.8	222	122.1	258	140.9	294	136.4	330	113.4
7	84.5	43	57.3	79	38.9	115	44.0	151	67.4	187	95.5	223	122.7	259	141.1	295	136.0	331	112.6
8	83.7	44	56.6	80	38.6	116	44.5	152	68.1	188	96.3	224	123.4	260	141.4	296	135.5	332	111.9
9	82.9	45	55.9	81	38.4	117	45.0	153	68.9	189	97.1	225	124.1	261	141.6	297	135.0	333	111.1
10	82.1	46	55.2	82	38.2	118	45.5	154	69.7	190	97.9	226	124.8	262	141.8	298	134.5	334	110.3
11	81.3	47	54.5	83	38.1	119	46.1	155	70.4	191	98.7	227	125.5	263	141.9	299	133.9	335	109.6
12	80.5	48	53.9	84	37.9	120	46.6	156	71.2	192	99.5	228	126.1	264	142.1	300	133.4	336	108.8
13	79.7	49	53.2	85	37.8	121	47.2	157	71.9	193	100.3	229	126.8	265	142.2	301	132.8	337	108.1
14	78.9	50	52.6	86	37.7	122	47.7	158	72.7	194	101.1	230	127.4	266	142.3	302	132.3	338	107.3
15	78.2	51	51.9	87	37.6	123	48.3	159	73.5	195	101.8	231	128.1	267	142.4	303	131.7	339	106.5
16	77.4	52	51.3	88	37.6	124	48.9	160	74.3	196	102.6	232	128.7	268	142.4	304	131.1	340	105.7
17	76.6	53	50.7	89	37.5	125	49.5	161	75.0	197	103.4	233	129.3	269	142.5	305	130.5	341	105.0
18	75.8	54	50.1	90	37.5	126	50.1	162	75.8	198	104.2	234	129.9	270	142.5	306	129.9	342	104.2
19	75.0	55	49.5	91	37.5	127	50.7	163	76.6	199	105.0	235	130.5	271	142.5	307	129.3	343	103.4
20	74.3	56	48.9	92	37.6	128	51.3	164	77.4	200	105.7	236	131.1	272	142.4	308	128.7	344	102.6
21	73.5	57	48.3	93	37.6	129	51.9	165	78.2	201	106.5	237	131.7	273	142.4	309	128.1	345	101.8

22	72.7	58	47.7	94	37.7	130	52.6	166	78.9	202	107.3	238	132.3	274	142.3	310	127.4	346	101.1
23	71.9	59	47.2	95	37.8	131	53.2	167	79.7	203	108.1	239	132.8	275	142.2	311	126.8	347	100.3
24	71.2	60	46.6	96	37.9	132	53.9	168	80.5	204	108.8	240	133.4	276	142.1	312	126.1	348	99.5
25	70.4	61	46.1	97	38.1	133	54.5	169	81.3	205	109.6	241	133.9	277	141.9	313	125.5	349	98.7
26	69.7	62	45.5	98	38.2	134	55.2	170	82.1	206	110.3	242	134.5	278	141.8	314	124.8	350	97.9
27	68.9	63	45.0	99	38.4	135	55.9	171	82.9	207	111.1	243	135.0	279	141.6	315	124.1	351	97.1
28	68.1	64	44.5	100	38.6	136	56.6	172	83.7	208	111.9	244	135.5	280	141.4	316	123.4	352	96.3
29	67.4	65	44.0	101	38.9	137	57.3	173	84.5	209	112.6	245	136.0	281	141.1	317	122.7	353	95.5
30	66.6	66	43.6	102	39.1	138	57.9	174	85.2	210	113.4	246	136.4	282	140.9	318	122.1	354	94.8
31	65.9	67	43.1	103	39.4	139	58.6	175	86.0	211	114.1	247	136.9	283	140.6	319	121.4	355	94.0
32	65.1	68	42.7	104	39.7	140	59.3	176	86.8	212	114.9	248	137.3	284	140.3	320	120.7	356	93.2
33	64.4	69	42.2	105	40.0	141	60.1	177	87.6	213	115.6	249	137.8	285	140.0	321	119.9	357	92.4
34	63.7	70	41.8	106	40.3	142	60.8	178	88.4	214	116.3	250	138.2	286	139.7	322	119.2	358	91.6
35	62.9	71	41.4	107	40.7	143	61.5	179	89.2	215	117.1	251	138.6	287	139.3	323	118.5	359	90.8
36	62.2	72	41.0	108	41.0	144	62.2	180	90.0	216	117.8	252	139.0	288	139.0	324	117.8	360	90.0

Table A6.7. (U) YAVNE (31.53, E34.45). (U)

LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH		LAUNCH	
AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL	AZ	IN CL
1	89.1	37	59.1	73	35.4	109	36.3	145	60.7	181	90.8	217	118.5	253	139.3	289	138.6	325	117.1
2	88.3	38	58.3	74	35.0	110	36.8	146	61.5	182	91.6	218	119.2	254	139.7	290	138.2	326	116.3
3	87.4	39	57.6	75	34.6	111	37.3	147	62.3	183	92.4	219	119.9	255	140.0	291	137.8	327	115.6
4	86.6	40	56.8	76	34.2	112	37.8	148	63.1	184	93.2	220	120.7	256	140.3	292	137.3	328	114.9
5	85.7	41	56.0	77	33.8	113	38.3	149	64.0	185	94.0	221	121.4	257	140.6	293	136.9	329	114.1
6	84.9	42	55.2	78	33.5	114	38.9	150	64.8	186	94.8	222	122.1	258	140.9	294	136.4	330	113.4
7	84.0	43	54.5	79	33.2	115	39.4	151	65.6	187	95.5	223	122.7	259	141.1	295	136.0	331	112.6
8	83.2	44	53.7	80	32.9	116	40.0	152	66.4	188	96.3	224	123.4	260	141.4	296	135.5	332	111.9
9	82.3	45	52.9	81	32.7	117	40.6	153	67.2	189	97.1	225	124.1	261	141.6	297	135.0	333	111.1
10	81.5	46	52.2	82	32.4	118	41.2	154	68.1	190	97.9	226	124.8	262	141.8	298	134.5	334	110.3
11	80.6	47	51.4	83	32.2	119	41.8	155	68.9	191	98.7	227	125.5	263	141.9	299	133.9	335	109.6
12	79.8	48	50.7	84	32.0	120	42.4	156	69.7	192	99.5	228	126.1	264	142.1	300	133.4	336	108.8
13	78.9	49	50.0	85	31.9	121	43.1	157	70.5	193	100.3	229	126.8	265	142.2	301	132.8	337	108.1
14	78.1	50	49.2	86	31.8	122	43.7	158	71.4	194	101.1	230	127.4	266	142.3	302	132.3	338	107.3
15	77.3	51	48.5	87	31.7	123	44.4	159	72.2	195	101.8	231	128.1	267	142.4	303	131.7	339	106.5
16	76.4	52	47.8	88	31.6	124	45.0	160	73.1	196	102.6	232	128.7	268	142.4	304	131.1	340	105.7
17	75.6	53	47.1	89	31.5	125	45.7	161	73.9	197	103.4	233	129.3	269	142.5	305	130.5	341	105.0
18	74.7	54	46.4	90	31.5	126	46.4	162	74.7	198	104.2	234	129.9	270	142.5	306	129.9	342	104.2
19	73.9	55	45.7	91	31.5	127	47.1	163	75.6	199	105.0	235	130.5	271	142.5	307	129.3	343	103.4
20	73.1	56	45.0	92	31.6	128	47.8	164	76.4	200	105.7	236	131.1	272	142.4	308	128.7	344	102.6
21	72.2	57	44.4	93	31.7	129	48.5	165	77.3	201	106.5	237	131.7	273	142.4	309	128.1	345	101.8

22	71.4	58	43.7	94	31.8	130	49.2	166	78.1	202	107.3	238	132.3	274	142.3	310	127.4	346	101.1
23	70.5	59	43.1	95	31.9	131	50.0	167	78.9	203	108.1	239	132.8	275	142.2	311	126.8	347	100.3
24	69.7	60	42.4	96	32.0	132	50.7	168	79.8	204	108.8	240	133.4	276	142.1	312	126.1	348	99.5
25	68.9	61	41.8	97	32.2	133	51.4	169	80.6	205	109.6	241	133.9	277	141.9	313	125.5	349	98.7
26	68.1	62	41.2	98	32.4	134	52.2	170	81.5	206	110.3	242	134.5	278	141.8	314	124.8	350	97.9
27	67.2	63	40.6	99	32.7	135	52.9	171	82.3	207	111.1	243	135.0	279	141.6	315	124.1	351	97.1
28	66.4	64	40.0	100	32.9	136	53.7	172	83.2	208	111.9	244	135.5	280	141.4	316	123.4	352	96.3
29	65.6	65	39.4	101	33.2	137	54.5	173	84.0	209	112.6	245	136.0	281	141.1	317	122.7	353	95.5
30	64.8	66	38.9	102	33.5	138	55.2	174	84.9	210	113.4	246	136.4	282	140.9	318	122.1	354	94.8
31	64.0	67	38.3	103	33.8	139	56.0	175	85.7	211	114.1	247	136.9	283	140.6	319	121.4	355	94.0
32	63.1	68	37.8	104	34.2	140	56.8	176	86.6	212	114.9	248	137.3	284	140.3	320	120.7	356	93.2
33	62.3	69	37.3	105	34.6	141	57.6	177	87.4	213	115.6	249	137.8	285	140.0	321	119.9	357	92.4
34	61.5	70	36.8	106	35.0	142	58.3	178	88.3	214	116.3	250	138.2	286	139.7	322	119.2	358	91.6
35	60.7	71	36.3	107	35.4	143	59.1	179	89.1	215	117.1	251	138.6	287	139.3	323	118.5	359	90.8
36	59.9	72	35.8	108	35.8	144	59.9	180	90.0	216	117.8	252	139.0	288	139.0	324	117.8	360	90.0

Attachment 7

ASAT PROCESSING (U)

A7.1. (U) Message Formats.

A7.1.1. ~~(S)~~ ANCHOR Alert Initiation Message (SU79): (b)(1) USSC (b)(1) USSC

A7.1.1.1. (U) Transmission.

Precedence: FLASH
Classification: SECRET
From: SCC/ASCC
To: SSN

Table A7.1. (U) Sample Format. (U)

SECRET (When filled in)
SUBJECT: ANCHOR FLASH ALERTING INITIATION (U)
(S) SITES ARE TASKED ANCHOR FLASH UNTIL RELIEVED BY THE SCC.
(S) A POSSIBLE FOREIGN LAUNCH OCCURRED AT DDHHMMZ.
(S) SITE: [Tyuratam/Plesetsk]
(S) POSSIBLE BOOSTER: [SL-11/SL14]
(S) AZIMUTH: XXX.X DEGREES
(S) INCLINATION: XXX.X DEGREES
(S) POSSIBLE MISSION: CO-ORBITAL ASAT
(U) REMARKS: DO NOT TRANSMIT FLASH ELSETS ON THIS EVENT UNLESS DIRECTED
DECLASSIFY ON: ddmmmyyyy (Date of Event plus 10 years)
SECRET (When filled in)

A7.1.2. ~~(S)~~ ANCHOR Alert Termination Message (SU80): (b)(1) USSC (b)(1) USSC

A7.1.2.1. (U) Transmission.

Precedence: FLASH [or IMMEDIATE]
Classification: SECRET
From: SCC/ASCC
To: SSN

Table A7.2. (U) Sample Format. (U)

SECRET (When filled in)
SUBJ: ANCHOR FLASH TERMINATION (U) (U) REF MSG DTG DDHHMMZ MON YY (ANCHOR FLASH MSG DTG) (S) TERMINATE ANCHOR FLASH AT DDHHMMZ MON YY. DECLASSIFY ON: ddmmmyyyy (Date of Event plus 10 years)
SECRET (When filled in)

A7.1.3. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

A7.1.3.1. (U) Transmission.

Precedence: FLASH
Classification: SECRET
From: SCC/ASCC
To: SSN

Table A7.3. (S) Sample Format. (U)

SUBJ: NOMINAL ELSET VALID TIMES (U)
(U) REF DDHHMMZ MON YY [ANCHOR Alerting MSG DTG]
(S) REV 1 AND 2 PROFILE EFFECTIVE TIMES FOR ASAT ARE:
79XX1 DDHHMMZ TO DDHHMMZ 79XX5 DDHHMMZ TO DDHHMMZ
79XX2 DDHHMMZ TO DDHHMMZ 79XX6 DDHHMMZ TO DDHHMMZ
79XX3 DDHHMMZ TO DDHHMMZ 79XX7 DDHHMMZ TO DDHHMMZ
79XX4 DDHHMMZ TO DDHHMMZ 79XX8 DDHHMMZ TO DDHHMMZ
(S) FOR ASAT TARGET XXXXX:
79XX1 DDHHMMZ TO DDHHMMZ 79XX5 DDHHMMZ TO DDHHMMZ
79XX2 DDHHMMZ TO DDHHMMZ 79XX6 DDHHMMZ TO DDHHMMZ
79XX3 DDHHMMZ TO DDHHMMZ 79XX7 DDHHMMZ TO DDHHMMZ
79XX4 DDHHMMZ TO DDHHMMZ 79XX8 DDHHMMZ TO DDHHMMZ
(ADD OR DELETE AS NECESSARY)
(S) TRANSMIT FLASH ELSETS ONLY ON 79XX3/7 ANALYST SATELLITES.
(U) ADDITIONAL TRACKING INSTRUCTIONS WILL FOLLOW.
DECLASSIFY ON: ddmmmyyyy (Date of Event plus 10 years)

A7.1.4. (S) (b)(1) USSC

(b)(1) USSC

A7.1.4.1. (U) Transmission.

Precedence: FLASH [or IMMEDIATE]
Classification: UNCLASSIFIED
From: SCC/ASCC
To: SSN

Table A7.4. (S) Sample Format. (U)

aaaaaaa(Classification)aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaccl
SUBJECT: SPADOC NOTIFICATION (U)ccl
(a) aaa(Real/Test/Exercise Indicator)aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaccl
aaaaaaa(Passlines)aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaccl
1. (a) MESSAGE TYPE: FREE TEXT MESSAGEccl
2. (U) PREPARATION DATE TIME: ddhhmmZmmmnnccl
SUBJ: ANALYST SAT DELETION (U)ccl
3. (a) DELETE THE FOLLOWING ANALYST SATS FROM YOUR DATABASE:ccl
nnnnn.nnnnn.nnnnn.ccl
4. (a) IF YOU HAVE ANY QUESTIONS, CONTACT THE SCC VIA SECURE MEANS.ccl
DECLASSIFY ON ddmmmyyyyccl
MU99-4 Analyst Satellite Deletion

A7.2. ~~(S)~~ ASAT Analyst Satellite Numbering Convention. (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

A7.2.1. ~~(S)~~ Third Digit. (b)(1) USSC

(b)(1) USSC

A7.2.2. ~~(S)~~ Fourth Digit. (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

A7.2.3. ~~(S)~~ Fifth Digit. (b)(1) USSC

(b)(1) USSC

A7.2.3.1. (S) (b)(1) USSC

(b)(1) USSC

A7.2.3.2. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

A7.2.3.3. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

A7.2.3.4. (S) (b)(1) USSC
(b)(1) USSC

A7.2.3.5. (S) (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

Attachment 8

OPREP-3 REPORTS (U)

A8.1. ~~(S)~~ Reportable Errant Space Launch. (b)(1) USSC
(b)(1) USSC
(b)(1) USSC

A8.1.1. (U) OPREP-3 PINNACLE Voice Report.

A8.1.1.1. (U) General. Provide as much information as possible to the MD, but do not delay in order to gather additional information. Additional and/or amplifying information can be put in the follow-on hardcopy message.

A8.1.1.2. (U) Information required for voice report.

Errant time
Reportable event (according to the criteria in paragraph **4.2.14.**)
New azimuth
Predicted FSU overflight entry location (lat/long)
Predicted FSU overflight entry time
Predicted FSU overflight exit location (lat/long)
Predicted FSU overflight exit time

A8.1.2. (U) OPREP-3 PINNACLE Hardcopy Report.

A8.1.2.1. (U) Transmission.

Precedence: IMMEDIATE
Classification: UNCLAS FOUO
From: SCC/ASCC
To: AIG 7816, DEFSMAC, HQ AMC CRISIS ACTION TEAM, ASCC

Table A8.1. (U) Sample Format. (U)

MSGID/OPREP-3P/USSTRATCOM/YY-XXX [1]/MON//
AMPN/REPORTABLE ERRANT DOMESTIC SPACE LAUNCH
FLAGWORD/PINNACLE//
TIMELOC/DDHHMMZMMMYY/XXXXNXXXXXE [2]//
NARR/OPS NUMBER XXXX FROM XXXXX [3] DEVIATED FROM ITS PLANNED COURSE AND WAS DECLARED ERRANT AT DDHHMMZ [4]. IT IS REPORTABLE UNDER THE US/FSU ACCIDENT MEASURES AGREEMENT. THE NEW COURSE AZIMUTH IS XXX [5] DEGREES. IT IS EXPECTED TO OVERFLY THE FSU, ENTERING AT XXX.XN DEGREES LATITUDE, XXX.XE DEGREES LONGITUDE AT XXXXZ AND EXITING AT XXX.XN DEGREES LATITUDE, XXX.XE DEGREES LONGITUDE AT XXXXZ [6].
RMKS/BOOSTER IS A XXXXX, PAYLOAD IS XXXXX. A FOLLOW-UP REPORT (IS)/ IS NOT EXPECTED [7]//
NOTES:
[1] OPREP-3 serial number obtained from SCC.
[2] Time and location where vehicle went errant (must be in degrees/minutes, not degrees/ tenths of degrees. To convert, multiply tenths by 60).
[3] Launch site (ER/WR).
[4] Time declared errant on LCU (may be later than [2]).
[5] As reported on LCU.
[6] FSU entry and exit locations/times as determined by the SCC (can be in tenths of degrees).
[7] Booster/payload/additional remarks (SCC number, RCS, orbital inclination, status of tracking, etc.) optional. Statement on follow-up report is mandatory.

A8.2. ~~(S)~~ Non-reportable Errant Space Launch. (b)(1) USSC

(b)(1) USSC

A8.2.1. (U) OPREP-3 PINNACLE Voice Report.

A8.2.1.1. (U) General. Provide as much information as possible to the MD, but do not delay in order to gather additional information. Additional and/or amplifying information can be put in the follow-on hardcopy message.

A8.2.1.2. (U) Information required for voice report.

Errant time
Non-Reportable event (according to the criteria in paragraph **4.2.14.**)
New azimuth
Predicted FSU overflight entry location (lat/long)
Predicted FSU overflight entry time
Predicted FSU overflight exit location (lat/long)
Predicted FSU overflight exit time

A8.2.2. (U) OPREP-3 PINNACLE Hardcopy Report.

A8.2.2.1. (U) Transmission.

Precedence: IMMEDIATE
Classification: UNCLAS FOUO
From: SCC/ASCC
To: AIG 7816, DEFSMAC, HQ AMC CRISIS ACTION TEAM, ASCC

Table A8.2. (U) Sample Format. (U)

MSGID/OPREP-3P/USSTRATCOM/YY-XXX [1]/MON// AMPN/NON-REPORTABLE ERRANT DOMESTIC SPACE LAUNCH FLAGWORD/PINNACLE// TIMELOC/DDHHMMZMMMYY/XXXXNXXXXXE [2]// NARR/OPS NUMBER XXXX FROM XXXXX [3] DEVIATED FROM ITS PLANNED COURSE AND WAS DECLARED ERRANT AT DDHHMMZ [4]. IT IS NOT REPORTABLE UNDER THE US/FSU ACCIDENT MEASURES AGREEMENT. THE NEW COURSE AZIMUTH IS XXX [5] DEGREES. IT IS EXPECTED TO OVERFLY THE FSU, ENTERING AT XXX.XN DEGREES LATITUDE, XXX.XE DEGREES LONGITUDE AT XXXXZ AND EXITING AT XXX.XN DEGREES LATITUDE, XXX.XE DEGREES LONGITUDE AT XXXXZ [6]. RMKS/BOOSTER IS A XXXXX, PAYLOAD IS XXXXX. A FOLLOW-UP REPORT (IS)/ IS NOT EXPECTED [7]//
NOTES: [1] OPREP-3 serial number obtained from SCC. [2] Time and location where vehicle went errant (must be in degrees/minutes, not degrees/ tenths of degrees. To convert, multiply tenths by 60). [3] Launch site (ER/WR). [4] Time declared errant on LCU (may be later than [2]). [5] As reported on LCU. [6] FSU entry and exit locations/times as determined by the SCC (can be in tenths of degrees). [7] Booster/payload/additional remarks (SCC number, RCS, orbital inclination, status of tracking, etc.) optional. Statement on follow-up report is mandatory.

A8.3. (S) (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

A8.3.1. (U) OPREP-3 PINNACLE Voice Report.

A8.3.1.1. (U) General. Provide as much information as possible to the MD, but do not delay in order to gather additional information. Additional and/or amplifying information can be put in the follow-on hardcopy message.

A8.3.1.2. (U) Information required for voice report.

Shuttle name/SCC number
Reportable event (according to the criteria in paragraph **4.2.14.**)
Time and location of shuttle burn
Predicted FSU overflight entry location (lat/long)
Predicted FSU overflight entry time

A8.3.2. (U) OPREP-3 PINNACLE Hardcopy Report.

A8.3.2.1. (U) Transmission.

Precedence: IMMEDIATE
Classification: UNCLAS FOUO
From: SCC/ASCC
To: AIG 7816, DEFSMAC, HQ AMC CRISIS ACTION TEAM, ASCC.

Table A8.3. (U) Sample Format. (U)

MSGID/OPREP-3P/USSTRATCOM/YY-XXX [1]/MON//
AMPN/SIGNIFICANT SPACE EVENT
FLAGWORD/PINNACLE//
TIMELOC/DDHHMMZMMMYY/XXXXNXXXXXE [2]//
NARR/THE SPACE SHUTTLE, STS-XX, SCC NUMBER XXXXX, IS EXPECTED TO DO ITS DEORBIT BURN AT THE ABOVE TIME AND LOCATION. ATMOSPHERIC REENTRY WILL OCCUR 30 MINUTES LATER. THE SHUTTLE IS EXPECTED TO OVERFLY THE XXXXXXX [3]
LANDMASS BETWEEN APPROXIMATELY DDHHMMZ AND DDHHMMZ. REENTRY AND
L&I REPORTS WILL BE GENERATED AS A RESULT OF THIS DEORBIT.
RMKS/A FOLLOW-UP REPORT (IS)/IS NOT EXPECTED [4].//
NOTES:
[1] OPREP-3 serial number obtained from SCC.
[2] Time and location where shuttle will do its deorbit burn, according to NASA (must be in degrees/minutes, not degrees/tenths of degrees. To convert from tenths of degrees to minutes, multiply the tenths by 60).
[3] FSU or other country that shuttle will overfly after deorbit burn.
[4] Statement on follow-up report is mandatory.

A8.4. ~~(S)~~ Initial Reportable RA. (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

A8.4.1. (U) OPREP-3 PINNACLE Voice Report.

A8.4.1.1. (U) General. Provide as much information as possible to the MD, but do not delay in order to gather additional information. Additional and/or amplifying information can be put in the follow-on hardcopy message.

A8.4.1.2. (U) Information required for voice report.

Time of event/object type/SCC number
Reportable event (according to the criteria in paragraph **4.2.14.**)
Predicted FSU overflight entry location (lat/long)
Predicted FSU overflight entry time
General shape and size of object Mission of object

A8.4.2. (U) OPREP-3 PINNACLE Hardcopy Report.

A8.4.2.1. (U) Transmission.

Precedence: IMMEDIATE [or FLASH]
Classification: SECRET
From: SCC/ASCC
To: AIG 7816, DEFSMAC, HQ AMC CRISIS ACTION TEAM, ASCC.
(If reportable for Southwest Asia area, add USCENTCOM.)

Table A8.4. (U) Sample Format. (U)

MSGID/OPREP-3P/USSTRATCOM/YY-XXX [1]/MON//
AMPN/SIGNIFICANT SPACE EVENT//
FLAGWORD/PINNACLE//
TIMELOC/DDHHMMZ/XXXXNXXXXXE [2]//
NARR/RA REPORT: (SIX OR TWO) HOUR THE XXXX[OBJECT TYPE] OF XXXXX [COUNTRY] SATELLITE XXXXXXX [COMMON NAME], SCC NUMBER XXXXX, IS PREDICTED TO DECAY AT THE ABOVE TIME AND LOCATION WITH A CONFIDENCE WINDOW OF PLUS OR MINUS XX [3] MINUTES. WITHIN THIS WINDOW, THE OBJECT CROSSES THE EQUATOR AT XXX.XXE/W LONGITUDE WITH A XX.X DEGREE INCLINATION. THE PREDICTION PLACES THE OBJECT OVER THE FSU LANDMASS BETWEEN APPROXIMATELY DDHHMMZ AND DDHHMMZ. THE GENERAL SHAPE OF THE OBJECT IS XXXXXX [4] AND ITS APPROXIMATE SIZE IS XX.X SQUARE METERS. THE MISSION OF OBJECT XXXXX [SCC #] IS XXXXXXXXXX [5].//
NOTES:
[1] OPREP-3 serial number obtained from SCC.
[2] Time and location of predicted reentry (must be in degrees/minutes, to convert from tenths of degrees to minutes, multiply the tenths by 60).
[3] From RA Alert message produced by Orbital Analyst, or use standard default value
[4] Cylindrical, round, flat, etc.
[5] Mission of payload associated with this object (communications, photo, resupply, etc.).

A8.5. ~~(S)~~ Reportable Reentry Assessment (RA) Update. (b)(1) USSC

(b)(1) USSC

(b)(1) USSC

A8.5.1. (U) OPREP-3 PINNACLE Voice Report.

A8.5.1.1. (U) General. Provide as much information as possible to the MD, but do not delay in order to gather additional information. Additional and/or amplifying information can be put in the follow-on hardcopy message.

A8.5.1.2. (U) Information required for voice report.

Time of event/object type/SCC number
Reportable event (according to the criteria in paragraph **4.2.14.**)
Predicted FSU overflight entry location (lat/long)
Predicted FSU overflight entry time
General shape and size of object Mission of object

A8.5.2. (U) OPREP-3 PINNACLE Hardcopy Report.

A8.5.2.1. (U) Transmission.

Precedence: IMMEDIATE [or FLASH]
Classification: Dependant on message content
From: SCC/ASCC
To: AIG 7816, DEFSMAC, HQ AMC CRISIS ACTION TEAM, ASCC.
(If reportable for Southwest Asia area, add USCENTCOM.)

Table A8.5. (U) Sample Format. (U)

MSGID/OPREP-3P/USSTRATCOM/YY-XXX [1]/MON//
AMPN/SIGNIFICANT SPACE EVENT//
FLAGWORD/PINNACLE//
REF/A/OPREP-3P/USSTRATCOM/YY-XXX [2]//
TIMELOC/DDHHMMZ/XXXXNXXXXXE [3]//
NARR/RA REPORT: TWO HOUR
SCC OBJECT XXXXX IS NOW PREDICTED TO DECAY AT THE ABOVE TIME AND LOCATION
WITH A CONFIDENCE WINDOW OF PLUS OR MINUS XX [4] MINUTES. WITHIN THIS
WINDOW, THE OBJECT CROSSES THE EQUATOR AT XXX.XXE/W LONGITUDE WITH
A XX.X DEGREE INCLINATION. THIS PREDICTION PLACES THE OBJECT OVER THE
FSU LANDMASS BETWEEN APPROXIMATELY DDHHMMZ AND DDHHMMZ. THIS IS THE LAST REPORT ON THIS OBJECT PRIOR TO DECAY.//
NOTES:
[1] OPREP-3 serial number obtained from SCC (same number as initial report, plus "A").
[2] OPREP-3 serial number of original (6-hour) report.
[3] Time and location of predicted reentry (must be in degrees/minutes, not degrees/tenths of degrees. To convert from tenths of degrees to minutes, multiply the tenths by 60).
[4] From RA Alert message produced by Orbital Analyst, or use standard default value.

A8.6. ~~(S)~~ Non-Reportable RA Update. (b)(1) USSC

(b)(1) USSC

A8.6.1. (U) OPREP-3 PINNACLE Voice Report.

A8.6.1.1. (U) General. Provide as much information as possible to the MD, but do not delay in order to gather additional information. Additional and/or amplifying information can be put in the follow-on hardcopy message.

A8.6.1.2. (U) Information required for voice report.

Time of event/object type/SCC number
Reportable event (according to the criteria in paragraph **4.2.14.**)
Predicted FSU overflight entry location (lat/long)
Predicted FSU overflight entry time
General shape and size of object Mission of object

A8.6.2. (U) OPREP-3 PINNACLE Hardcopy Report.

A8.6.2.1. (U) Transmission.

Precedence: IMMEDIATE [or FLASH]
Classification: Dependant on message content
From: SCC/ASCC
To: AIG 7816, DEFSMAC, HQ AMC CRISIS ACTION TEAM, ASCC
(If reportable for Southwest Asia area, add USCENTCOM.)

Table A8.6. (U) Sample Format. (U)

MSGID/OPREP-3P/USSTRATCOM/YY-XXX [1]/MON//
AMPN/SIGNIFICANT SPACE EVENT//
FLAGWORD/PINNACLE//
REF/A/OPREP-3P/USSTRATCOM/YY-XXX [2]//
TIMELOC/DDHHMMZ/XXXXNXXXXXE [3]//
NARR/RA REPORT: TWO HOUR
SCC OBJECT XXXXX IS NO LONGER REPORTABLE. IT IS NOW PREDICTED TO DECAY AT THE ABOVE TIME AND LOCATION WITH A CONFIDENCE WINDOW OF PLUS OR MINUS XX [4] MINUTES. THE OBJECT WILL NOT CROSS THE FSU LANDMASS WITHIN PLUS OR MINUS
15 MINUTES OF PREDICTED DECAY TIME. THIS IS THE LAST REPORT ON THIS OBJECT PRIOR TO DECAY.//
NOTES:
[1] OPREP-3 serial number obtained from SCC (same number as initial report, plus "A").
[2] OPREP-3 serial number of original (6-hour) report.
[3] Time and location of predicted reentry (must be in degrees/minutes, not degrees/tenths of degrees. To convert from tenths of degrees to minutes, multiply the tenths by 60).
[4] From RA Alert message produced by Orbital Analyst, or use standard default value.

A8.7. ~~(S)~~ RA/Satellite Breakup (b)(1) USSC (b)(1) USSC

A8.7.1. (U) OPREP-3 PINNACLE Voice Report.

A8.7.1.1. (U) General. Provide as much information as possible to the MD, but do not delay in order to gather additional information. Additional and/or amplifying information can be put in the follow-on hardcopy message.

A8.7.1.2. (U) Information required for voice report.

Time of event/object type/SCC number
Reportable event (according to the criteria in paragraph **4.2.14.**)
Predicted FSU overflight entry location (lat/long)
Predicted FSU overflight entry time
General shape and size of object
Mission of object

A8.7.2. (U) OPREP-3 PINNACLE Hardcopy Report.

A8.7.2.1. (U) Transmission.

Precedence: IMMEDIATE [or FLASH]
Classification: Dependant on message content
From: SCC/ASCC
To: AIG 7816, DEFSMAC, HQ AMC CRISIS ACTION TEAM, ASCC, NDCC (Ottawa).

Table A8.7. (U) Sample Format. (U)

MSGID/OPREP-3P/USSTRATCOM/YY-XXX [1]/MON//
AMPN/SIGNIFICANT SPACE EVENT//
FLAGWORD/PINNACLE//
TIMELOC/DDHHMMZ/XXXXNXXXXXE [2]//
NARR/SATELLITE BREAKUP THE XXXX [OBJECT TYPE] OF XXXXX [COUNTRY] SATELLITE XXXXXXX [COMMON NAME], SCC NUMBER XXXXX, HAS BROKEN UP IN SPACE. THE MISSION OF XXXXX [SCC #] IS XXXXXXXXX [3]. THIS IS A RA THAT IS PREDICTED TO DECAY AT APPROXIMATELY DDHHMMZ AT XXXXN XXXXXE WITH A CONFIDENCE WINDOW OF PLUSOR MINUS XX MINUTES. [OR: THE PIECES OF THIS OBJECT WILL DECAY AT UNDETERMINED LOCATIONS AND TIMES.] THERE ARE APPROXIMATELY XXX PIECES ASSOCIATED WITH THIS BREAKUP. THE SIZE OF THE LARGEST PIECE IS XX.X SQUARE METERS. THESE OBJECTS ARE PREDICTED TO CROSS THE EQUATOR AT XXX.XXE/W LONGITUDE WITH A XX.X DEGREE INCLINATION. THE SPACE CONTROL CENTER ESTIMATES OVERFLIGHT OF THE FSU LAND MASS AT THE FOLLOWING TIME(S):
ENTRY EXIT
DDHHMMZ DDHHMMZ
DDHHMMZ DDHHMMZ [4]
A FOLLOW-UP REPORT IS/IS NOT EXPECTED.//
NOTES:
[1] OPREP-3 serial number obtained from SCC
[2] Estimated time and location of breakup (must be in degrees/minutes, to convert from tenths of degrees to minutes, multiply the tenths by 60)
[3] Mission of payload associated with this object (communications, photo, resupply, etc.)
[4] Times objects enter and exit over the FSU landmass border, from the first overflight after breakup for the next six revolutions (or as many up to six as apply).

Attachment 9

DISTRIBUTION LIST (U)

A9.1. (U) Distribution List. Table A9.1. is the distribution list for this SD.

Table A9.1. (U) Distribution List. (U)

CMOC/J3S, 1 NORAD RD, Suite 9101, Cheyenne Mountain AS CO 80914-605	20
CMOC/J3S, 1 NORAD RD, Suite 9101, Cheyenne Mountain AS CO 80914-605	20
CMOC/J3T, 1 NORAD RD, Suite 215C, Cheyenne Mountain AS CO 80914-6101	2
CMOC/CVS, 1 NORAD RD, Suite 7-55, Cheyenne Mountain AS CO 80914-605	1
CMOC/J2W, 1 NORAD RD, Suite 9302, Cheyenne Mountain AS CO 80914-6072	1
USSTRATCOM/ANS SW (Rm 105), 250 S Peterson Blvd, Suite 116, Peterson AFB CO 80914-3180	1
USSTRATCOM/J2F SW, 570 Suffolk St, Peterson AFB CO 80914-1680	2
USSTRATCOM/DEFSMAC Exchange Officer, 250 S Peterson Blvd, Peterson AFB CO 80914-3030	1
USASSDC/CSSD-OP-S, P.O. Box 15280, Arlington VA 22215-0280	2
HQ USARSPACE/MOSC-OP-S, 1670 N. Newport Rd, Colorado Springs CO 80916-2757	2
USAKA/CSSD-KA-RI, P.O. Box 26, APO AP 96555-2526	2
USSTRATCOM/OP34, 250 S Peterson Blvd, Suite 116, Peterson AFB CO 80914-3090	30
USSTRATCOM/J35 SW, 250 S Peterson Blvd, Suite 116, Peterson AFB CO 80914-315	1
USSTRATCOM/J5B SW (Rm 122), 250 S Peterson Blvd, Suite 116, Peterson AFB CO 80914-3170	1
USSTRATCOM/J5R SW (Rm 224), 250 S Peterson Blvd, Suite 116 Peterson AFB CO 80914-3080	1
USSTRATCOM/J67 SW, 150 Vandenberg St, Suite 1105, Peterson AFB CO 80914-4530	1
USSTRATCOM/J6 SW (Rm 219), 250 S Peterson Blvd, Suite 116, Peterson AFB CO 80914-3110	1
USSTRATCOM/HO SW (Rm 426), 250 S Peterson Blvd, Suite 116, Peterson AFB CO 80914-3160	1
HQ AFSPC/DOCP, 150 Vandenberg St, Suite 1105, Peterson AFB CO 80914-4190	1
HQ AFSPC/DOO, 150 Vandenberg St, Suite 1105, Peterson AFB CO 80914-450	2

HQ AFSPC/DOY, 150 Vandenberg St, Suite 1105, Peterson AFB CO 80914-425	2
HQ AFSPC/DRCS, 150 Vandenberg St, Suite 1105, Peterson AFB CO 80914-4580	1
HQ AFSPC/IG, 125 E Ent Ave, Peterson AFB CO 80914-1281	1
HQ AFSPC/SCN, 150 Vandenberg St, Suite 1105, Peterson AFB CO 80914-4730	1
HQ AFSPC/XPX, 150 Vandenberg St, Suite 1105, Peterson AFB CO 80914-4610	1
13 SWS/DO, 50 AST, Stop 40013, Clear AFS AK 99704-5000	3
7 SWS/DO, 7400 Spencer Paul Rd, Beale AFB CA 95903-1906	1
14 AF/A33/DOX/OV, 747 Nebraska Ave, Suite 22, Vandenberg AFB CA 93437-6268	2
18 SPSS/DO, 12 Laboratory Rd, Edwards AFB CA 93524-8390	3
21 SOPS/DOR, Onizuka AFS, 1080 Lockheed Way, Box 046, Sunnyvale CA 94089-1235	2
30 RANS/DMI, 826 13th St, Bldg. 7011, Rm 101, Vandenberg AFB CA 93437-5212	1
533 TRS/DO, 680 11th Street, Suite 126, Vandenberg AFB, CA 93437-555	30
D Space D 2-2, Directorate of Space Development, National Defence Headquarters, MGen George R. Pearkes Bldg, Ottawa, Ontario, Canada K1AOK2	2
Canadian Forces Joint Headquarters, J5 Space Policy, Kinston, Ontario, Canada	1
DCOS SP OPS, AIR COMMAND HQ, Westwin, Manitoba, Canada R3J 0T0	1
1 SPCS/DO, 1 NORAD Rd, Suite 7205, Cheyenne Mountain AFS CO 80914-6009	20
21 OSS/OSOG/OSOX, 775 Loring Ave, Suite 115, Peterson AFB CO 80914-1297	2
21 OSS/OSXP, 775 Loring Ave, Suite 103, Peterson AFB CO 80914-1297	2
21 SW/DOC, 775 Loring Ave, Suite 235, Peterson AFB CO 80914-1295	2
50 LSS/SCUR, 300 O'Malley Ave, Suite 146, Schriever AFB CO 80912-3030	1
544 IG/DP, 150 Vandenberg St, Suite 1105, Peterson AFB CO 80914-4130	1
Det 1, 533 TRS/DOS, National Test Facility, M/S N900 CMTS, 730 Irwin Ave, Schriever AFB CO 80912-7300	5
Det 4 AFOTEC/CM, 4146 E Bijou ST, Colorado Springs CO 80909-6899	1
17 TS/CC, 730 Irwin Ave, STE 83, Schriever AFB CO 80912-7383	2
MITRE Corp, 1150 Academy Park Loop, Suite 212, Colorado Springs CO 80910	1
NRO Operations Squadron (NOPS), 401 Discoverer Ave, STE 32, Schriever AFB CO 80912	1

Raytheon Support Service Co, 1330 Inverness Drive, Suite 400, Colorado Springs CO 80910-3754	2
ESC/NDC, 160 Patrick St, Peterson AFB CO 80914-2530	1
USARSPACE, 150 Vandenberg St, Suite 1105, Peterson AFB CO 80914-425	1
5 SPSS/DO, 57 W. D Ave, Suite 125, Eglin AFB FL 32542-6848	7
45 RANS (CCAS), 10400 Phillips Parkway, Patrick AFB FL 32925-2618	5
45 RANS/DS (CCAS), 1645 Phillips Parkway, Patrick AFB FL 32925-5522	1
DET 8, SMC/CWP, 1046 S. Patrick Dr, Bldg. 981, Rm 102, Patrick AFB FL 32925	1
ITT Federal Services Corp, Kaena Point Tracking Site, PO Box 977 (RS480), Waianae HI 96792-0977	2
Det 3, 18 SPSS, 535 Lipoa Parkway, Suite 50, Kihei, Maui HI 96753-6999	1
National Security Agency/DEFSMAC/PIW4, Fort George G. Meade MD 5755-6000	1
6 SWS/DO, Cape Cod AfS, PO Box 428, Sagamore MA 02561-0428	3
HQ ESC/TNB/TNI/TNG, 5 Eglin ST, Hanscom AFB MA 01731-2121	3
HQ ESC/SRD/SRE, 50 Griffiss St, Hanscom AFB MA 01731-1622	4
MIT Lincoln Lab, Millstone Radar, 244 Wood ST, Lexington MA 02173-9108	1
MIT Lincoln Lab, Surveillance Tech Group, 244 Wood St, Lexington MA 02173-9108	1
MIT Lincoln Lab, Field System Group, 244 Wood St, Lexington MA 02173-9108	1
MITRE Corp, Attn: R. McGaffign-D130, 52 Burlington Rd, Bedford MA 01730-145	3
Raytheon Co. Equipment Div, 430 Boston Post Rd, Wayland MA 01778-5000	3
HQ AFOTEC/TSR, 8500 Gibson Blvd SE, Kirtland AFB NM 87117-5558	1
HQ AFSC/SEWE, 9700 Ave G SE, Kirtland AFB NM 87117-5670	1
Det 1, 18 SPSS, PO Box W, Socorro NM 87801-5000	3
MIT/Lincoln Lab GEODSS Field Site, PO Box 1707, Socorro NM 87801-1707	1
4 SPSS/IM, 1424 Sabre Rd, Holloman AFB NM 88330-7842	3
Lockheed Martin, PO Box 4840, Syracuse NY 13221-4840	1
10 SWS/DO, HCR 3, BOX 260, Cavalier AFS ND 5825-9314	3
NAIC/DXDR/DXDL, 4115 Hebble Creek Rd, Suite 6, Wright-Patterson AFB OH 45433-5610	2

NAIC/TASC, 4115 Hebble Creek Rd, Suite 6, Wright-Patterson AFB OH 45433-6508	1
Armed Forces Staff College/JCEWS-C3D, 7800 Hampton Blvd, Norfolk VA 23511-6097	1
Naval Space Command /N32, 5280 Fourth St, Dahlgren VA 22448-5300	3
National Reconnaissance Office/NROC/Office of Policy, 14675 Lee Road, Chantilly VA 20151-1715	4
Joint Staff/J33 (NMCC Surveillance Officer), Pentagon Rm 2B894, Washington DC 5318-3000	1
Joint Staff/J38/DSOD, Pentagon Rm 3C860, Washington DC 5318-3000	1
SAF/SXP, 1640 Air Force, Pentagon, Washington DC 5330-1640	1
5 SPSS/IM, Unit 5060, Box 260, APO AE 09461-0260	3
12 SWS/DO, PSC 1501, Box 1072, APO AE 09704-5000	3
21 OG/USAFLO, PSC 52, Unit 8170, APO AE 09496-8170	4
Lockheed Martin, Attn: Maintenance Management, PSC 725, APO AE 09824-725	1
AFELM/PEP High Wycombe, PSC 821 Box 10, FPO AE 09421	3
Det 4, 18 SPSS/DO, Unit 6585, Bldg. 1301, Rm 101, APO AE 09643-6585	2
3 SPSS/IM, Unit 5197, APO AP 96319-5197	3
Commander, US Kwajalein Missile Range, PO Box 26, APO AP 96555-2526	8
Det 2, 18 SPSS/DC, PSC 466, Box 51, FPO AP 96595-0051	1
MIT Lincoln Lab/Attn: Document Control, Box 58, APO AP 96555-2526	4
45 RANS (1), Range Technical Services, Account 1 (Security)	1
Range Technical Services, Account 7 (Operations Control Reference Library)	1
Range Technical Services, Account 50 (Ascension)	1
Total:	283

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