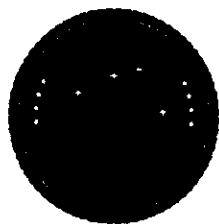


BY ORDER OF THE COMMANDER

**STRATEGIC COMMAND DIRECTIVE
(SD) 505-1 VOL 2**

13 FEB 2004



Operations, Planning, and Command and Control

**SPACE SURVEILLANCE OPERATIONS -
EVENT PROCESSING (U)**

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OPR: OP50 (Lt Col (b)(6) USSC)
Supersedes USSPACECOM Instruction (UI)
10-40, 2 September 1997

Certified by: CSS (Maj (b)(6) USSC)
Pages: 128
Distribution: X

Classified by: USSTRATCOM/OP

Reason: 1.5 (a) (d)

Declassify on: X1

(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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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

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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.
<p>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.</p>	

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
<div data-bbox="149 283 305 331">(b)(1) USSC</div> <div data-bbox="149 739 393 821">(b)(1) USSC</div> <div data-bbox="149 884 824 947">(b)(1) USSC</div>	(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

4.14.2. (S)

(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.