

KSC LOD NO. 9A
Date: FEBRUARY 14, 1973
Page 1 of 4
(Replaces LOD NO. 9 dated
AUGUST 31, 1967)

=====

KSC LAUNCH OPERATIONS DIRECTIVE NO. 9A

To: Distribution

From: *R. H. [Signature]*
for Director of Launch Operations

Subject: SCHEDULING AND CONTROL PROCEDURES FOR COMMAND CONTROL
SYSTEM RECEIVERS

1.1 PURPOSE

The purpose of this directive is to define the control procedure that will minimize unwanted signals or commands from affecting a vehicle or GSE that has its receivers energized but is not the addressee of the signal or command.

2.1 SCOPE

Multiple vehicle/system tests require scheduling of radio frequency radiation and reception. RF radiation is controlled and scheduled in accordance with KMI 25-70.1B and other directives. Reception must be controlled whenever an unwanted signal or command could create a hazard or system malfunction which would result in excessive loss of test time. The command systems are the most susceptible systems in this category. The following frequencies are utilized for these operations: 416.5, 450, 2101.8, 2106.4 MHz. This directive applies when any receiver that may receive an unwanted signal or command can cause a system malfunction and loss of test time. The requirements of LOD #6 paragraph 7.1.1.1 must be observed when a hazardous operation is conducted. This directive does not supersede the provisions of other directives that pertain to RF operations such as RCE1 30-29.

3.1 RESPONSIBILITIES

a. The radiation or frequency controller at each launch complex or other test areas is responsible for determining that no strong unwanted radiation on the receiver frequency is expected while performing a Test and Checkout Procedure (TCP) or other special receiver tests. The radiation and frequency controllers are the only personnel that can obtain radiation clearance or the information needed for receiver protection. Identification of the radiation or frequency controller depends on the level of the test being conducted and work area location. For small system tests or special tests not directly involving a launch vehicle or spacecraft, any frequency or radiation controller can act as required. For a launch vehicle or spacecraft integrated test the appropriate Test Conductor is the frequency and radiation controller. For space vehicle tests the Test Supervisor/Test Controller becomes the frequency and radiation controller. When a conflict in schedule develops, the frequency or radiation controller will contact the KSC Scheduling Office, TS-NTS-1, for resolution of the scheduling conflict based on existing operational priorities.

b. Priorities will be established by the Director of Launch Operations. The KSC Scheduling Office, TS-NTS-1, is responsible for implementing priorities for tests. When schedule conflicts are encountered, the KSC Scheduling Office will advise the responsible frequency or radiation controllers the priority which has been assigned to the tests in question. Conflicts in priorities will be referred to the Director of Launch Operations or his representative for resolution.

c. The responsible NASA or contractor systems engineers will identify those tests or periods of operation during which frequency protection and/or frequency monitoring is required and indicate the requirement in the appropriate TCP, Requirements Document (RD) and Operations Requirement (OR). In the case of special tests or a test not covered by a TCP, the responsible engineers will inform the Radiation and Frequency Controller when the frequency protection is required.

=====

4.1 INSTRUCTION

a. The responsible NASA or contractor system engineers will identify as critical those tests where an unwanted signal or command could cause an unwanted action to result or an unwanted command to be stored in the system.

b. When these critical tests are formalized in a TCP, the TCP/RD/OR shall indicate that frequency protection is required and the frequencies involved. For a critical test being performed without a TCP, the system engineer will inform the Radiation or Frequency Controller of the desirability of frequency protection and the frequencies involved.

c. The TCP or system engineer will also indicate the environment in which the receiver will be operating; i.e., open loop, or closed loop.

d. When informed by the TCP or by the system engineer of the desirability of frequency protection and when frequency clearance has not previously been requested, the Radiation or Frequency Controller will advise the AF Frequency Scheduling Office (AFFSO) (853-7034). The AFFSO will schedule protection only on a non-interference-basis (NIB) unless it has been previously scheduled on an Operations Directive (OD). When scheduled NIB the AFFSO will advise the requestor if any transmitters are scheduled on frequencies involved during the time period specified. Information regarding the location of radiated power of other scheduled activities will be obtained. Any change in these scheduled activities prior to or during the test period will be provided to the requestor.

If an Air Force Eastern Test Range (AFETR) test number is desired or required to assure the user that a frequency will be available for a specified time period the KSC scheduling office TS-NTS-1 (867-3013), should be contacted. For Complex 39 contact the scheduling office through the TS Duty Officer.

e. For the purpose of this LOD Frequency Protection is defined to exist when one range user has control over a specified frequency or frequency band during a defined time period. Frequency Monitoring is defined as frequency surveillance external to the system for the purpose of detecting and identifying unscheduled RF emissions. Emissions will be reported to the frequency monitoring requestor.

KSC LOD NO. 9A
Date: FEBRUARY 14, 1973
Page 4 of 4
(Replaces LOD NO. 9 dated
AUGUST 31, 1967)

5.1 PROCEDURE

The procedure to be followed in complying with this directive is included as Attachment 1.

End of Directive.

ATTACHMENT 1

Procedure:

General Information:

Purpose: This procedure prevents unintentional reception of scheduled radiated signals. Reception of unwanted signals can cause improper or erroneous test results that necessitate extensive retesting to determine what caused the apparent malfunction. This procedure does not supersede existing procedures and regulations that pertain to the command control receivers operating in a hazardous environment. Call signs, format, and times may be changed if it is desirable to incorporate this procedure into another procedure.

Call Signs: AFFSO, Range frequency scheduling,
 (SRO) 853-7034, alternate 853-2141.
 (No Call sign for AFFSO-black phone
 only, use SRO for OIS coordination).

 NTS-1, KSC scheduling, 867-3013.

 RO, Command system receiver operator.

 FC, Frequency or Radiation Controller.
 A list of personnel that have been
 assigned as frequency or radiation
 controllers is available from TS-
 OSM, 867-6603. If the test is
 controlled or directed by a test
 supervisor or a test conductor, he
 is the cognizant controller.

Time	Seq.	Command Sta.	Response Sta.	Description
-15'	1	RO	FC	Request frequency protection for duration of this test. The operating frequency is ___ MHZ. The receiver/transmitter will be operating open or closed loop.
-13'	1	FC	AFFSO (SRO)	This is FC ____, we have a test scheduled on ___ MHZ from ___ AM to ___ PM. Will you advise me of any scheduled radiation on that frequency and inform me if there is any change in schedule during this test.

ATTACHMENT 1, Page 2

<u>Time</u>	<u>Seq.</u>	<u>Command Sta.</u>	<u>Response Sta.</u>	<u>Description</u>
-10'	1	AFFSO (SRO)	FC	A. We have no scheduled activity at this time. B. We have ___ station scheduled from ___ PM to ___ PM radiating open or closed loop.
-10'	2-B	FC	NTS-1	We have a conflict in utilization of the frequency ___ MHZ. We have a test at ___ and ___ station is scheduled to radiate at ___ PM to ___ PM. Can you advise who has priority.
-10'	2-B-1	NTS-1	FC	A. You have priority. We will advise ___ station to reschedule their test. B. Station ___ has priority. We would advise you to reschedule your test.
-10'	2A 2B-1A	FC	RO	We have a secure frequency. You may start your test.
-10'	2B-1B	FC	RO	We can not obtain a secure frequency and must reschedule the test.