

KSC LAUNCH OPERATIONS DIRECTIVE NO. 10A

To: Distribution

From: Rocco A. Petrone
Rocco A. Petrone
Director of Launch Operations

Subject: APOLLO/SATURN V INCLEMENT WEATHER OPERATIONS

1. PURPOSE

To outline those procedures to be implemented when a weather condition exists or will probably exist that will have an impact upon the space vehicle systems, support equipment, or personnel. This Directive is effective from Space Vehicle arrival at a pad until lift-off.

2. SCOPE

Definitions are given which describe weather conditions that can predictably cause concern for hardware and personnel. Methods of information accrual and dissemination are discussed relative to three levels of weather disturbances. Responsibilities are outlined. The contents of this LOD define basic operational policy and tasks to be followed by Launch Operations organizations. It is intended to be supplemental to existing policy and task directives and procedures required to implement activities within the envelope of concern.

3. RESPONSIBILITIES

Overall control of operations occurring during a period of inclement weather will be the responsibility of the Test Supervisor. The Launch Vehicle Test Conductor, Spacecraft Test Conductor, and Test Support Controller/Complex Duty Officer will be responsible for the timely implementation of activities required to configure hardware and personnel to the proper posture. Identification of specific areas of concern during the expected conditions to prevail will fall within the scope of their responsibility. The development and implementation of specific operating procedures is to remain the responsibility of the government agency/contractor organizations directly involved.

4. INSTRUCTIONS

4.1 The U. S. Weather Bureau/KSC Station will monitor atmospheric

conditions 24 hours per day and will notify the Test Supervisor and the Test Support Controller/Complex Duty Officer whenever one or all of the following conditions could possibly impact LC-39 within approximately 30 minutes.

- a. Peak winds of gale force (35 knots) or above.
- b. Cloud to Ground Lightning within 5 statute miles of LC-39.
- c. Heavy rain.

4.2 Notification to this effect will define the existence of an adverse weather alert.

4.3 The weather bureau representative will continue to monitor existing conditions and if the adverse weather appears to be imminent or highly probable, he will advise the Test Supervisor and suggest issuance of a severe weather condition warning to all area personnel. If the Test Supervisor concurs, the bureau will then notify the Test Support Controller/Complex Duty Officer.

4.4 The weather bureau representative will continue to monitor atmospheric conditions and will advise the Test Supervisor when the severe weather condition warning and/or the adverse weather alert can be lifted.

4.5 A storm warning is to be issued whenever steady state winds of 45 knots can be expected within 72 hours.

5. ADVERSE WEATHER ALERT

5.1 The Test Supervisor will, on receipt of the alert, notify the Launch Vehicle Test Conductor and Spacecraft Test Conductor. He will then make the following public address announcement to Complex 39: Attention All Personnel. This Is The Test Supervisor. We Are Now In An Adverse Weather Alert Due To A Possibility Of _____ All Personnel Not Required For The Performance Of Essential Activities Please Clear The Pad Area.

5.2 The Test Supervisor will continue to monitor and evaluate data and advice received from the facility measuring station, U. S. Weather Bureau, and pad safety officer to determine the desirability of issuing a severe weather condition warning to the complex. He will continuously disseminate weather information to the Launch Vehicle and Spacecraft Test Conductors and aid in real time operation scheduling based on the latest weather developments.

5.3 The Launch Vehicle and Spacecraft Test Conductors will determine, from the nature of the alert, systems which should be secured, and tests which should be curtailed or postponed. They will initiate the appropriate action through the contractor test conductors following coordination with the Test Supervisor. The stage test conductors will maintain continuous OIS contact with the Launch Vehicle and Spacecraft Test Conductors and will keep them appraised of the status of their preparations. Since a severe weather condition will impact all areas of the pad, tasks within the perimeter work areas as well as the Mobile Launcher and Mobile Service Structure should not be initiated unless they can be conveniently interrupted.

5.4 Some examples of weather preparations are:

- a. Bring vehicle power down to ensure personnel within the vehicle can transfer to the swing arms.
- b. Install temporary access covers on vehicle.
- c. Retract Swing Arm Tips.
- d. Curtail hammerhead crane operations, etc.
- e. Secure MSS Annulus Fliptips.

NOTE: "Securing of the Annulus Fliptips on the MSS Platforms during Inclement Weather Operations is the responsibility of the contractor organization at whose respective Space Vehicle Station the platforms are located."

5.5 The Test Support Controller/Complex Duty Officer, on receipt of an adverse weather alert will proceed in accordance with procedure No. CCC-2 "Disseminating Weather Information at LC-39". In addition, he will contact the pad safety officer and the facility measuring station and ensure that they contact the Test Supervisor. The Complex Duty Officer will arrange for the proper dissemination of information to support departments and will initiate appropriate securing activities. He will also provide for the proper notification of special weather support personnel (e.g. General repair crew, elevator operations to monitor cables, etc.).

6. SEVERE WEATHER CONDITION

6.1 Whenever sufficient evidence exists that the complex will be subjected to gale force winds, heavy rain, or cloud to ground lightning within 5 statute miles of complex (audio-visual or a potential gradient reading of more than 2.4 KV/M), the Test Supervisor will declare a severe

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weather condition. He will transmit this information via OIS to the Launch Vehicle Test Conductor, Spacecraft Test Conductor and Test Support Controller/Complex Duty Officer. He will then make the following public address announcement to the entire complex: Attention All Personnel. This Is The Test Supervisor. We Are Now Under Severe Weather Conditions Because Of _____ . (Lightning Only) Entry Onto Or Departure From The Mobile Launcher And Mobile Service Structure Is No Longer Permitted. Remain Within The Metal Framework Of The Mobile Launcher And Mobile Service Structure.

6.2 The Test Supervisor will continue to monitor weather conditions until the restriction can be safely lifted. He will coordinate with Test Conductors and Support personnel to ensure necessary precautions are implemented to safeguard both personnel and equipment; however, primary responsibility for the activities of individuals remains with their employers unless they are reacting to explicit directions given to them by the Test Supervisor, Launch Vehicle or Spacecraft Test Conductors.

7. STORM WARNING

When sufficient evidence exists that winds in excess of 45 knots (tropical storm) may be experienced in the complex vicinity within 72 hours, the Test Supervisor is to be informed by the U. S. Weather Bureau. The Test Supervisor will notify the Launch Operations Manager or the Director of Launch Operations and will request permission to begin preparations for movement of the space vehicle to the VAB. When permission is granted, procedure V-45003-501-1 "Apollo/Saturn V S/V Transfer From Pad to VAB" will be initiated. Notification of complex personnel of the storm warning will be via public address system with the following announcement: Attention All Personnel. This Is The Test Supervisor. A Storm Warning Exists At This Time Due To Predicted Winds In Excess Of 45 Knots Within 72 Hours.

End of Directive.

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