



**Oakland  
County  
International  
Airport**

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***GROUND RUN-UP ENCLOSURE (GRE)***

***Aircraft Maintenance Engine Run-Up Procedures***

*Adopted: July 8, 2004*

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## SECTION ONE – INTRODUCTION

Oakland County International Airport (OCIA) constructed a ground run-up enclosure (GRE) in 2004 to reduce noise levels generated by aircraft maintenance engine run-ups and to reduce noise impact on the neighborhoods located in the near vicinity of OCIA. This manual describes the operational procedures associated with GRE operations at OCIA. The GRE is described in more detail in Attachments B and C. The GRE shall be used for all maintenance-related test runs of aircraft engines at OCIA, except as otherwise specified or approved by the Airport Manager.

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## SECTION TWO – PROCEDURES FOR USE OF THE GRE

### 1. PROCEDURES FOR USE OF THE GRE:

- 1.1 All commercial, general aviation and military turbojet aircraft with a wingspan up to 112 feet must perform **all** maintenance run-ups in excess of 50% EPR in the GRE.
- 1.2 Reciprocating engine aircraft types, rotorcraft, and aircraft with a wingspan larger than 112 feet are not required to utilize the GRE for maintenance run-ups. Idle engine runs for purposes of leak checks and other maintenance procedures should not be done in the GRE. Idle runs 50% N<sub>1</sub> and below may be performed at the aircraft's parking location when these runs do not present a hazard to Persons or property.
- 1.3 The facility is intended to be used for engine run-up operations only. Maintenance on aircraft within the facility will be limited to minor adjustments that will not affect use of the facility by others nor create environmental concerns. All equipment and tools must be removed from the facility at the completion of each run-up.

### 2. OPERATING HOURS

The GRE is available for use between the hours of 0700 and 2100. Other times may be allowed under emergency conditions with prior permission of the Airport Manager. Use will be on a first-come, first-serve basis. Reservations are not accepted. It is the responsibility of the aircraft operator to confirm the availability of the GRE by calling Airport Administration at 248.666.3900 before requesting taxi clearance from ATCT. **Occupancy of the GRE by another aircraft is not an acceptable reason to conduct an unsuppressed run-up.**

### 3. COOPERATION AND SUBSTITUTIONS

Cooperation among users is encouraged. Operators may relinquish their turn to another operator with a more time critical run-up; however, the airport will not pressure an operator to accept a delay for the convenience of another. When an operator relinquishes time to another operator, the displaced aircraft will be allowed to resume its run-up.

#### **4. AIRCRAFT INGRESS TO THE GRE**

##### **4.1 Aircraft with Wingspan Up To 112 Feet**

Aircraft with wingspan up to 112 feet must be backed into the GRE with a tug. ATCT must be contacted for clearance before any aircraft or vehicles are operated on active taxiways. Proper communications between the aircraft, tow vehicle, and the ATCT must be maintained at all times during the taxi/tow operations. Aircraft will taxi to Taxiway A (in front of the GRE) under their own power to avoid slow moving tug and tow operations, which may cause taxiway congestion. Aircraft will be connected to the tug on Taxiway A and positioned on the GRE centerline at the appropriate distance from the rear blast deflector.

##### **4.2. Aircraft with Wingspan Greater Than 112 Feet**

Aircraft with wingspan 112 feet or greater are too large to use the GRE. Run-ups will be conducted in accordance with proper procedures for conducting unsuppressed run-ups.

#### **5. AIRCRAFT ORIENTATION**

##### **5.1. Aircraft Positioning**

All jet aircraft shall be positioned facing straight out of the GRE, while on or parallel to the GRE centerline prior to beginning a high-power run-up. Under no circumstances should any run-up be performed with the blast pointed toward the sidewalls of the GRE, as they are not designed to withstand these forces. A description of the GRE and Layout diagram is included as Exhibit B in this document.

##### **5.2. Clearance**

Two lines parallel to the blast deflector have been painted on the pavement to identify appropriate clearance from the rear blast deflector. The aircraft shall be positioned so that no portion of the aircraft extends aft past the "No Tail Closer" line (located 35 feet ahead of the jet blast deflector leading edge). The discharge nozzle of any engine which will be operated during the test must be forward of the "No Nozzle Closer" line (located 60 feet ahead of the blast deflector leading edge). Aircraft should be positioned as far into the GRE as practical in order to achieve maximum acoustical attenuation.

#### **6. STOPPAGE DUE TO GRE DAMAGE**

Damage to the GRE must be reported to Airport Maintenance at 248.666.5984 immediately upon discovery. The Airport will examine the damage and make a

determination whether or not the damage is of a nature that would preclude continued use of the GRE. At the discretion of Airport Manager, the GRE will be taken out of service until necessary repairs are made and the appropriate inspections are completed.

## **7. WING WALKERS**

All GRE users are encouraged to use wing walkers when positioning aircraft within the GRE to prevent damage and to ensure the aircraft is correctly positioned within the GRE.

## **8. INSPECTION BEFORE AND AFTER USE**

It is the responsibility of the user to inspect the GRE pavement area for foreign object debris (FOD) prior to beginning a run-up. If any FOD is found, it is to be removed prior to beginning the engine run-up operation. The user should also ensure that the interior is FOD-free before leaving the GRE. Users should report any problems found in the GRE to Airport Maintenance at 248.666.5984.

## **9. AIRCRAFT EGRESS FROM THE GRE**

Following engine testing within the GRE, all aircraft may power out, using minimum power necessary. Contact ATCT prior to entering Taxiway A.

## **10. WIND AND WEATHER CONDITIONS**

Exhibit D includes predicted aerodynamic usability wind roses for various aircraft types. These are general guidelines defining the wind direction and speed parameters when the GRE can be used. These parameters will vary with the type of aircraft, engine position and the power settings used for the engine testing. An illuminated reader board displaying wind speed and direction is attached to the south wall of the GRE for easy visibility from the aircraft cockpit. Additionally, a lighted wind cone is located ahead of the GRE opening on the west side of the entrance taxiway. The operator should closely monitor engine-operating readings and abort the test if readings exceed engine manufacturer's limits, if variances in readings indicate unsteady engine operation, or if other indications suggest continued operation might endanger people or property. If the operator still needs to continue the run-up operation, it is recommended that the operator wait until conditions improve so that the run-up can be safely completed. If this is not possible, the operator may request an unsuppressed run-up.

## **11. EXCEPTIONS TO USING THE GRE**

There may be times when adverse wind or other conditions exist that may prevent a reliable test of engine performance, or use of the GRE is not possible due to closure for maintenance, repair work or other conditions outside the control of the user. Under such conditions, unsuppressed run-ups may be conducted only with the prior approval of the Airport Manager.

## **12. EQUIPMENT/VEHICLE PARKING**

A wide paved apron area is located ahead of the GRE. Any equipment or vehicles that accompany an aircraft to the GRE should be parked close to the GRE control room on the area outside the GRE walls in such a manner as not to obstruct the taxiway. Vehicles shall not drive across the narrowest portion of the GRE lead-in taxiway without two-way radio communications with the ATCT. Work stands, tow vehicles or other ground support equipment may not be parked or stored at the GRE.

## **13. SCHEDULING**

Users are required to call Airport Administration at 248.666.3900 to schedule use of the GRE. If unable to contact Airport Administration, call Airport Maintenance at (248) 666-5984. The following information is required when scheduling use of the GRE:

- Company/organization name
- Aircraft make, model and N-number
- Beginning time of run
- Estimated duration of run-up
- Maximum power setting to be used during the test
- Name of contact person
- User's contact number

Airport Administration will inform the caller if the GRE is occupied or vacant at the time of their call. If it is vacant, the user should contact ATCT for taxi instructions. If it is occupied, Airport Administration will inform the caller when it is expected to be available. Use of the GRE will be allowed in the order that requests are received.

## **14. GRE LIGHTING**

Security low-level lighting is provided within the GRE. The lights are on a photocell and remain on during hours of darkness.

Operational lighting is provided within the GRE for use during all run-up operations. The operational lighting is activated by a series of motion sensors, which will turn all lights on when an aircraft or vehicle moves within the GRE. The lights will remain on for a preset time of 30 minutes. (Note: It takes several minutes for the lights to reach full power.)

## **15. QUESTIONS**

Questions regarding any operational, inspection or maintenance issues involving the GRE, should be addressed to the Airport Manager at 248.666.3900. To report any safety issue or request an unsuppressed run-up, first call Airport Administration. If unable to reach Airport Administration, then contact Airport Maintenance at 248.666.5984.

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## SECTION THREE – RESPONSIBILITIES OF USERS

1. **PRELIMINARY INSPECTION** - Inspect the GRE for FOD and remove it prior to conducting a run-up. Ensure that the GRE is FOD-free upon completion of the run-up.
2. **FOLLOW GUIDELINES** - Perform engine run-ups in accordance with airframe and engine manufacturer's guidelines.
3. **MONITOR** - Closely monitor engine operation and discontinue any test if a condition exists that would prevent successful engine operation, in order to prevent damage to the aircraft or GRE.
4. **COMMUNICATION** - Maintain radio contact with the ATCT at all times during run-up activities.
5. **REPORTING** - Report any damage to the GRE to Airport Maintenance at 248.666.5984.
6. **TRAINING** - Ensure that all aircraft operators using the GRE have been trained to use the GRE safely.

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## SECTION FOUR – EMERGENCY PROCEDURES

1. **AIRPORT RESCUE AND FIREFIGHTING (ARFF)** - If radio communication with ATCT is not possible, emergency assistance can be obtained by calling ARFF at 248.666.5984 or on Unicom 122.95.
2. **FIRE EXTINGUISHING AGENTS** - Fire Extinguishing Agents: Two large wheeled fire extinguishers to handle minor fires are located in housings built into the GRE walls adjacent to the emergency exit doors. Notify ATCT or ARFF at 248.666.5984 of any type of fire, even if it has been extinguished with no damage to equipment or injury to Persons.
3. **FIRST-AID KIT** - A first-aid kit and eye wash station are located in the GRE control room for immediate care to minor injuries.
4. **FUEL OR OIL SPILL KIT** - A spill containment kit is located in the GRE control room for immediate on site containment of fuel spills. Notify Airport Administration at 248.666.3900 of any spills.



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## **SECTION FIVE – USER RISK AND LIABILITY DISCLAIMER**

The County and OCIA make no warranties with respect to the use of the GRE. Each user of the GRE uses it at the user's own risk and is responsible for monitoring all conditions, as described herein, to avoid risk of damage or injury to property or Person. Improper use of the GRE, or use during certain weather conditions, has been known to cause unreliable engine operation, up to and including compressor stalls. By their use of the GRE, each user assumes his/her own risk of loss, damage, or injury. Nothing in these procedures should be construed to supersede the recommendations of the aircraft manufacturers or of the aircraft operator's manual regarding the safe operation of the aircraft.

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## **ATTACHMENT A – AIRCRAFT USABILITY WIND ROSES**

- **A319**
- **B727**
- **B737**
- **Gulfstream II**
- **Gulfstream IV**
- **Gulfstream V**
- **Turboprop**

Ground Run-Up Enclosure  
Procedures Manual



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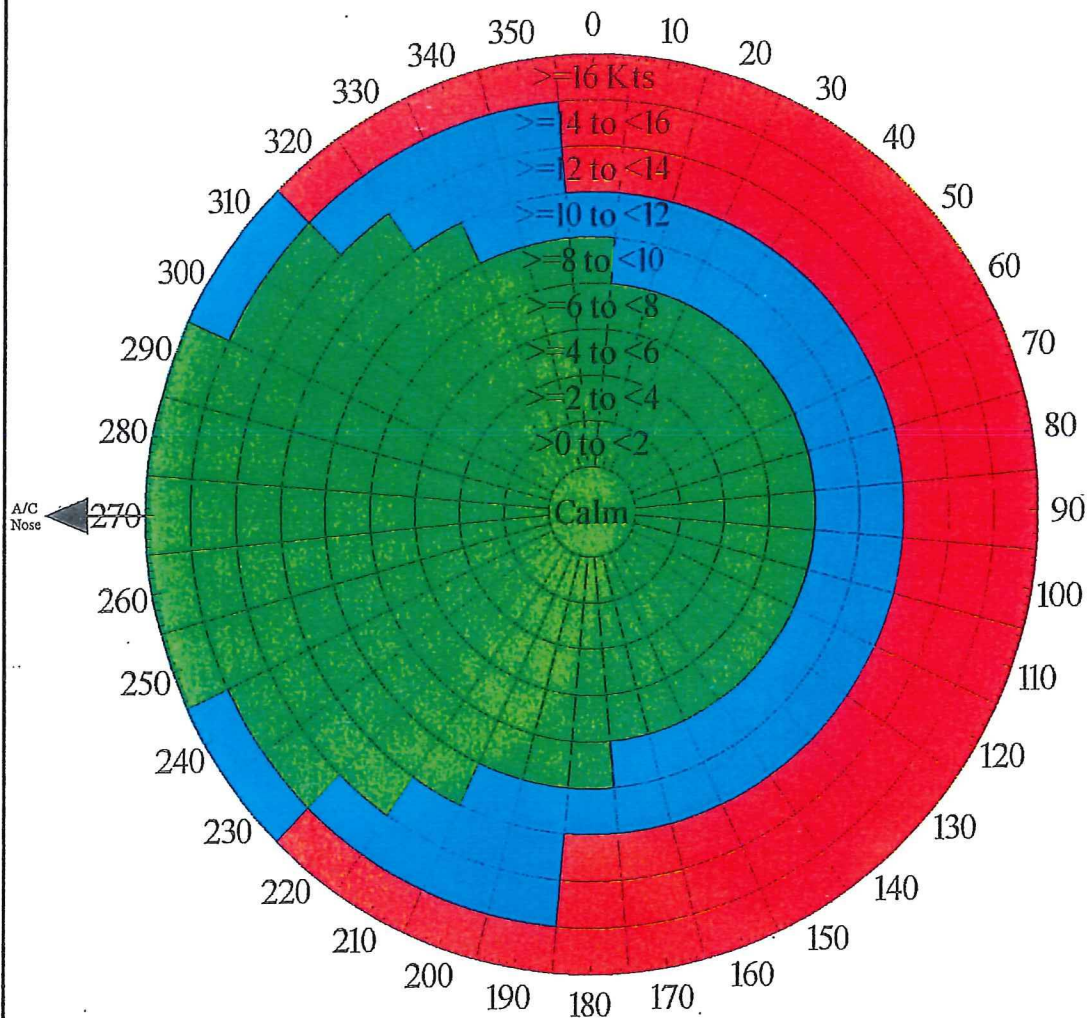


AIRCRAFT BLAST AND NOISE PROTECTION

# Oakland County Int'l Airport GRE

Aerodynamic Usability Windrose

Aircraft: A319



■ High-Power Runs Possible

■ High-Power Runs May be Possible (Dependent on Wind Stability & Engine Power Setting)

■ High-Power Runs Unlikely

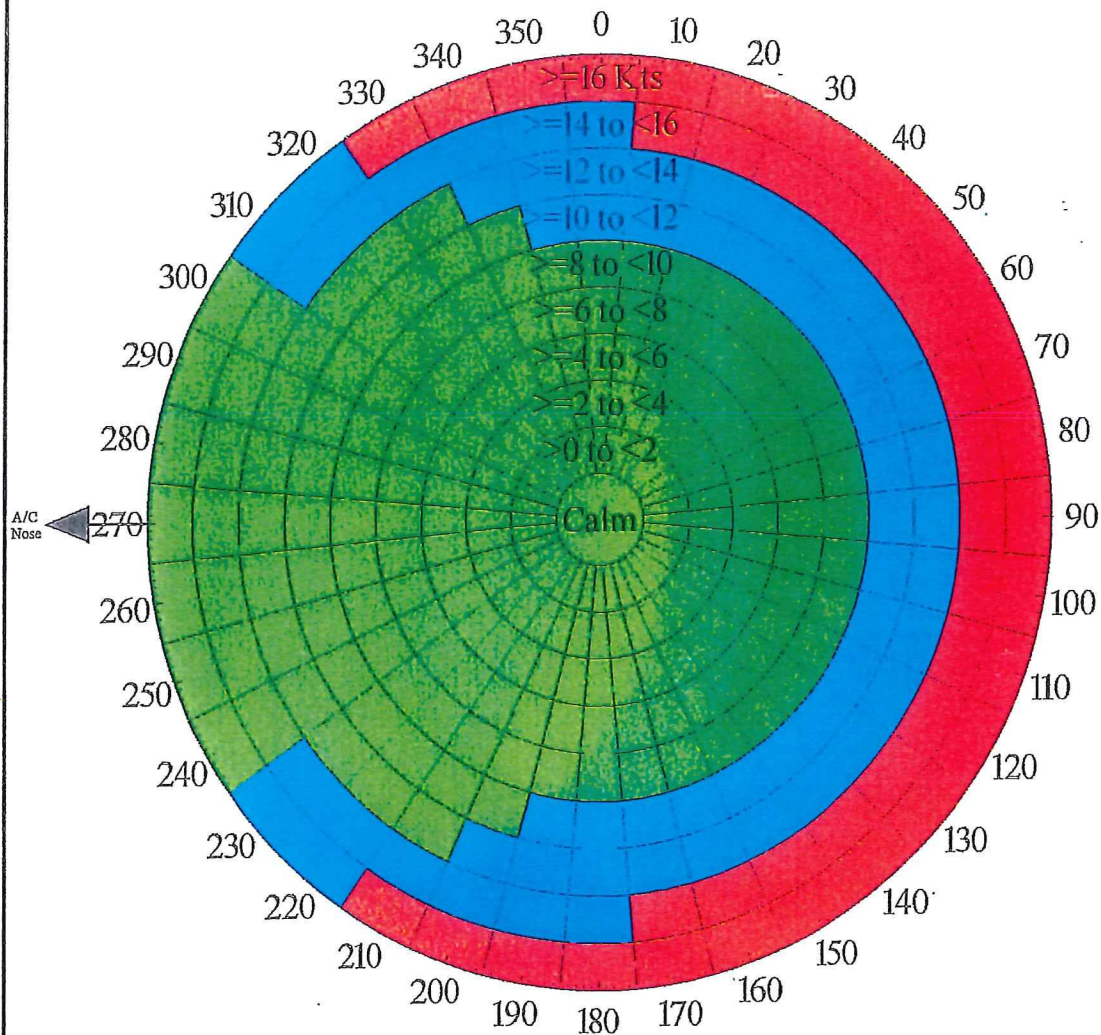
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# Oakland County Int'l Airport GRE

Aerodynamic Usability Windrose

Aircraft: B727



- High-Power Runs Possible
- High-Power Runs May be Possible (Dependent on Wind Stability & Engine Power Setting)
- High-Power Runs Unlikely



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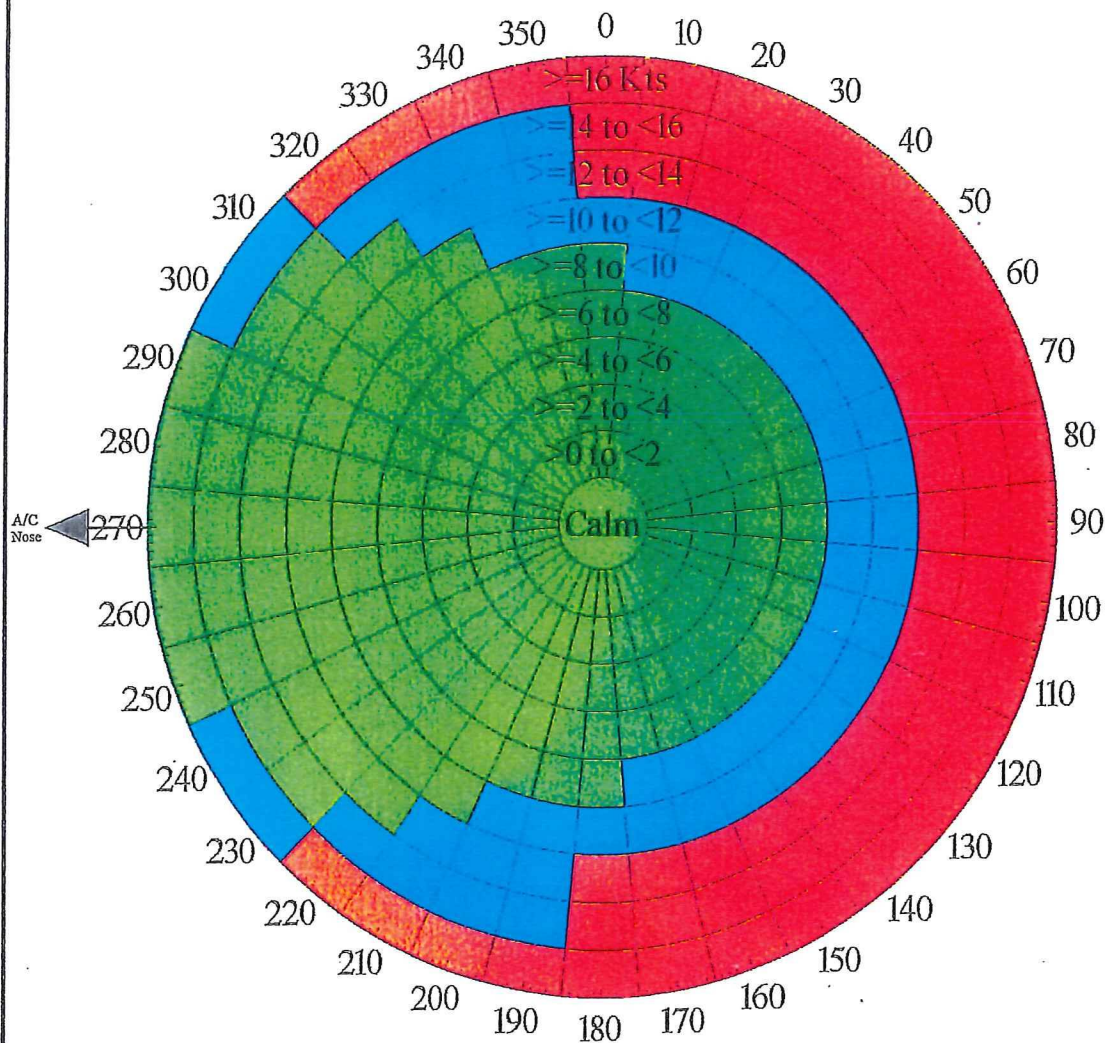
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AIRCRAFT-BLAST AND ROCKET PROTECTION

# Oakland County Int'l Airport GRE

Aerodynamic Usability Windrose

Aircraft: B737



High-Power Runs Possible

High-Power Runs May be Possible (Dependent on Wind Stability & Engine Power Setting)

High-Power Runs Unlikely

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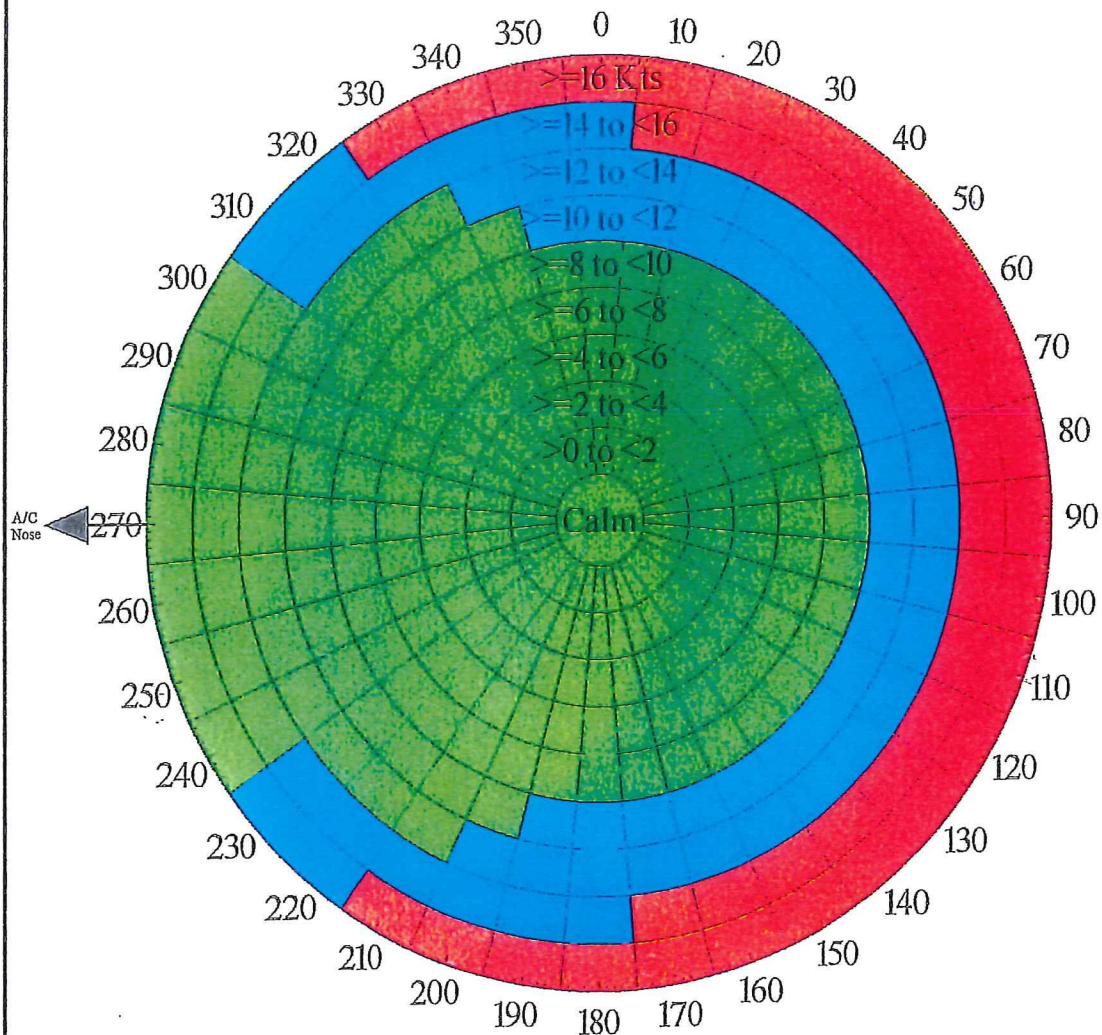
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AIRCRAFT AIRCRAFT PROTECTION

# Oakland County Int'l Airport GRE

Aerodynamic Usability Windrose

Aircraft: Gulfstream II



High-Power Runs Possible

High-Power Runs May be Possible (Dependent on Wind Stability & Engine Power Setting)

High-Power Runs Unlikely



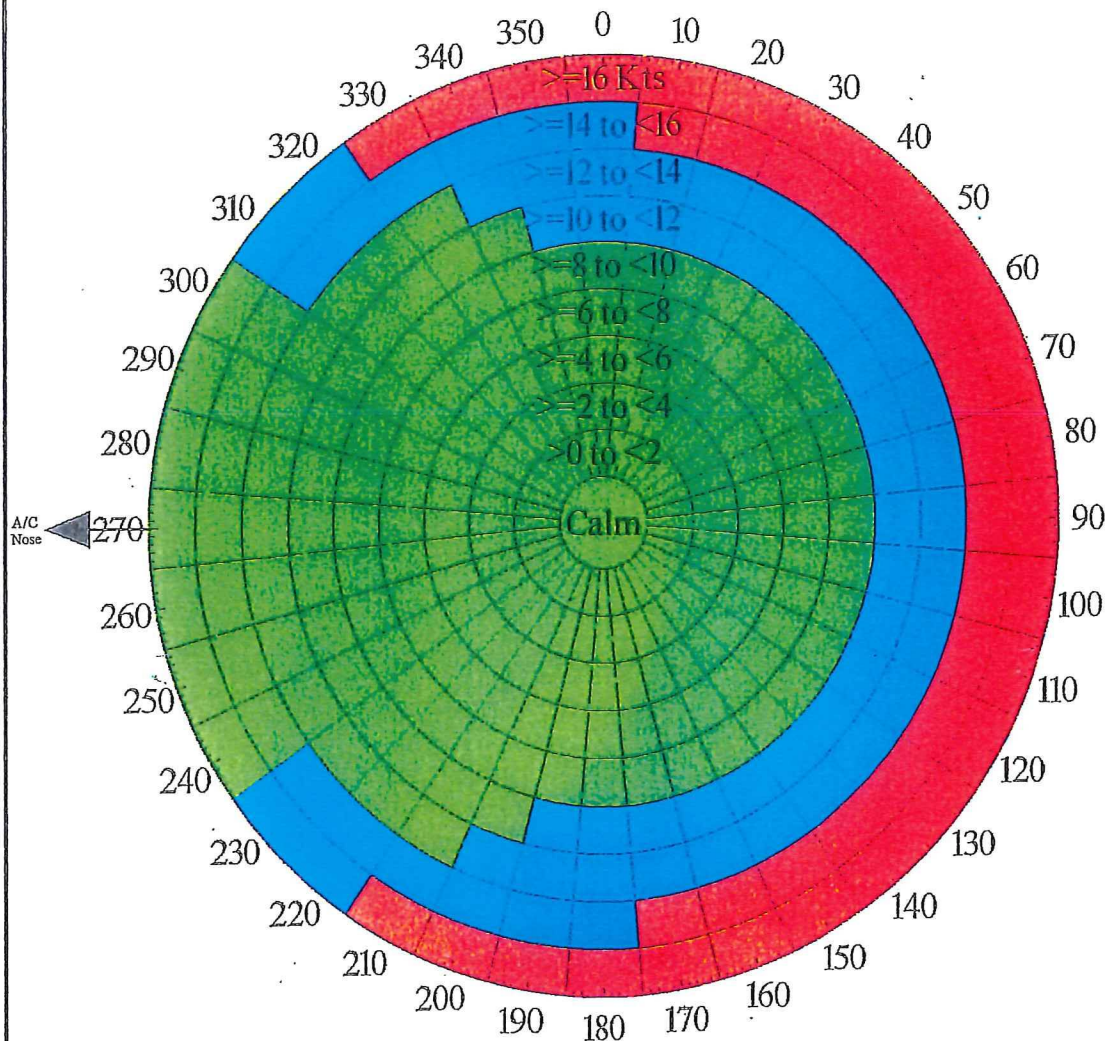
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RESISTANCE TO WIND NOISE DEFLECTION

# Oakland County Int'l Airport GRE

Aerodynamic Usability Windrose

Aircraft: Gulfstream IV



- High-Power Runs Possible
- High-Power Runs May be Possible (Dependent on Wind Stability & Engine Power Setting)
- High-Power Runs Unlikely

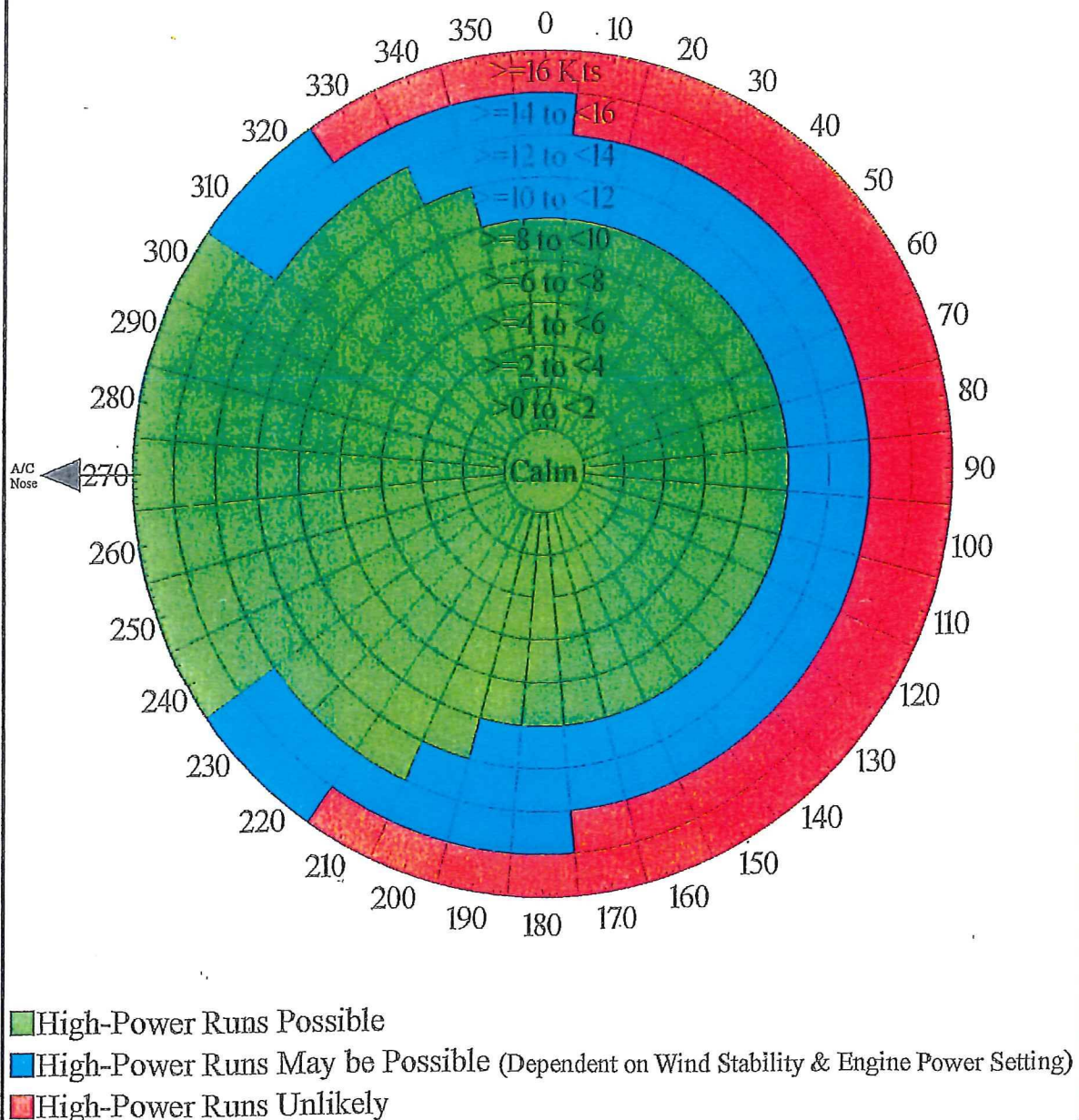
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AIRPORT TO AIRPORT PROTECTION

# Oakland County Int'l Airport GRE

Aerodynamic Usability Windrose

Aircraft: Gulfstream V





Ground Run-Up Enclosure  
Procedures Manual



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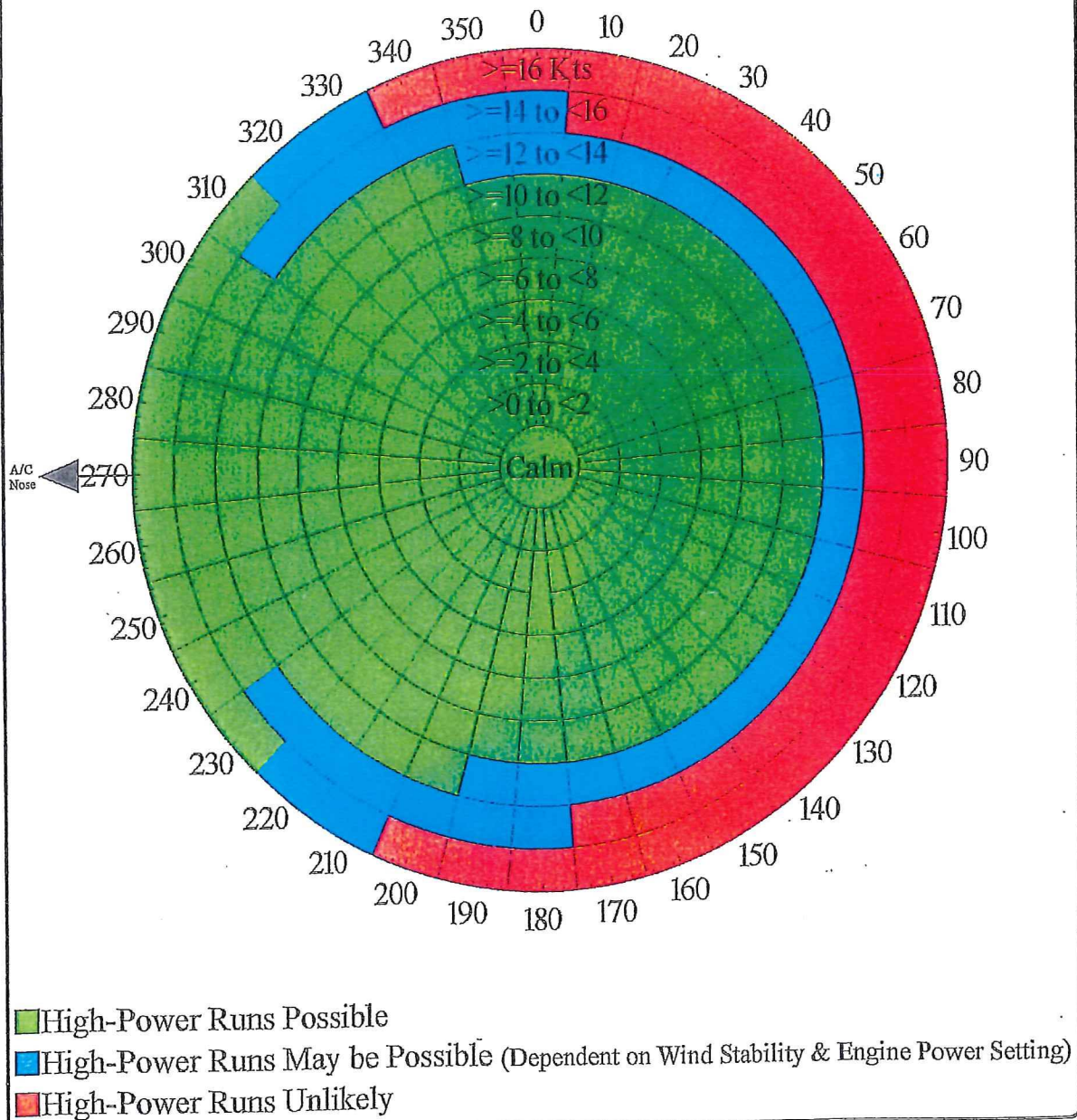
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SELECT A BLAST-PROOF NOISE PROTECTION

# Oakland County Int'l Airport GRE

Aerodynamic Usability Windrose

Aircraft: Turboprop



# Ground Run-Up Enclosure Procedures Manual



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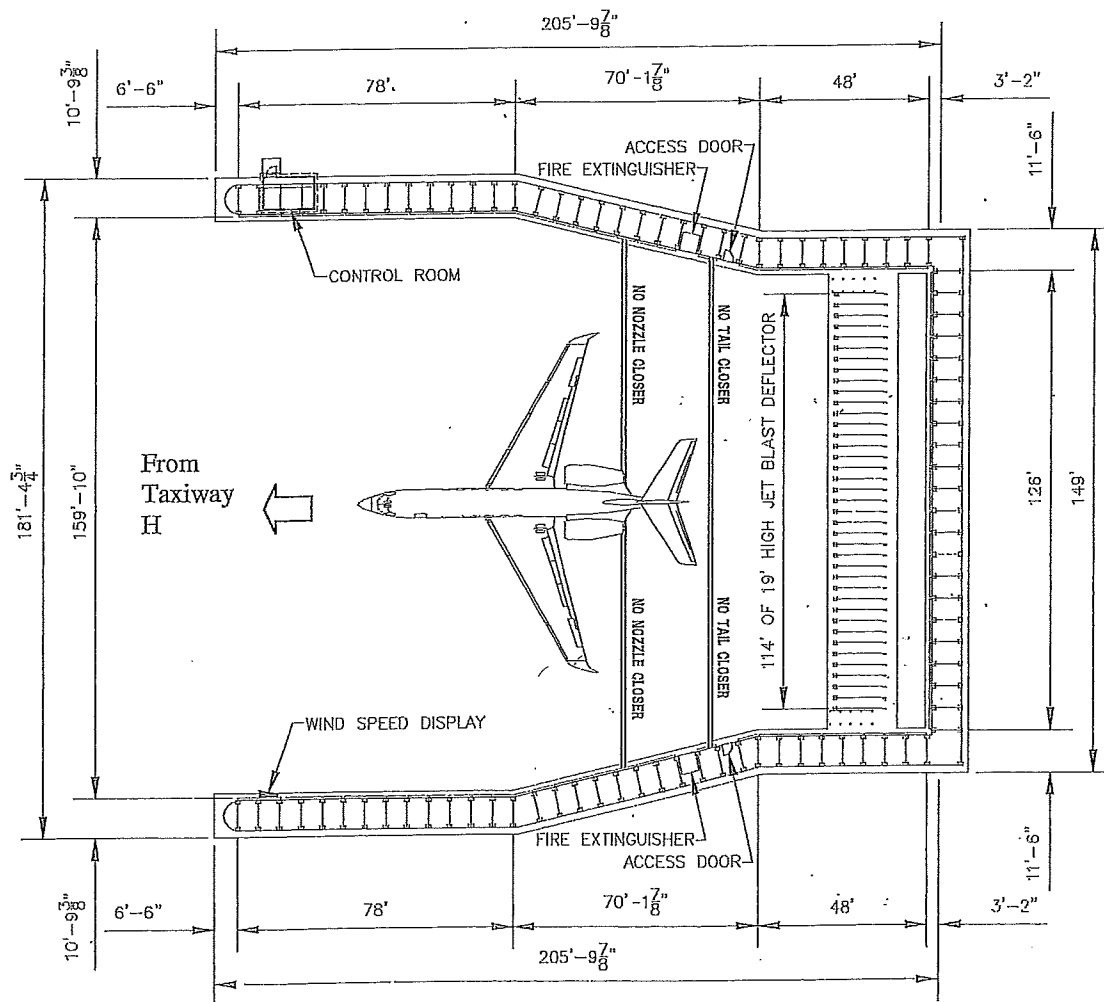
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## ATTACHMENT B

### GROUND RUN-UP ENCLOSURE LAYOUT





## ATTACHMENT C

### DESCRIPTION OF GROUND RUN-UP ENCLOSURE

#### Location

The GRE is located on Taxiway A, east of the Terminal Area. It is oriented 270 degrees Magnetic.

#### Access

**Aircraft Access:** Aircraft will access the GRE from the adjacent Taxiway A to the west of the GRE.

**Vehicle Access:** Vehicles allowed to operate on the airport must access the GRE by use of aircraft operating surfaces as directed by the FAA Ground Controller.

#### Description and Dimensions

**Orientation:** The GRE is a three-sided, open-roofed structure. Aircraft will be positioned within the GRE with nose pointing outward toward the open end at a heading of 270° Magnetic.

**Size:** Exterior dimensions are 178' wide by 210' deep. The clear interior opening is 160' wide inside wall to inside wall.

#### Pavement Markings

**Centerline:** A yellow line 6" wide will be located in the center of the facility.

**Tail Position:** A stripe across the facility floor located 35' ahead of the jet blast deflector is provided. This stripe extends 10' up the sidewalls of the facility and is labeled "No Tail Closer."

**Engine Position:** A stripe across the facility floor, located 60' ahead of the jet blast deflector is provided. This stripe extends 10' up the sidewalls of the facility and is labeled "No Nozzle Closer."

## Ground Run-Up Enclosure Procedures Manual



### Utility Buildings

#### Control Room (For use by aircraft maintenance personnel)

- Location: On the north outside wall of the GRE, near the open end of the GRE.
- Size: 10'-0" wide by 11'-3" deep.
- Access: 3' by 7' personnel door on the south wall, unlocked at all times.
- Windows: One window 3'-6" x 4'-0", is provided to view aircraft operating within the GRE.
- Electrical:
  - Lighting: two overheads, fluorescent fixtures within the control room, and one HID (high intensity discharge) wall pack outside over the door.
  - Wind speed and direction LED readout board.
  - On-off switch for operational lighting.
  - Convenience Outlets: Five GFGI outlets inside and one waterproof GFGI outlet outside.
- Electronics:
  - Wind speed/direction monitoring sensors are located on a mast atop the south wall of the GRE. A display system is mounted on the south wall of the GRE.
  - CCTV camera system is installed on the south wall to transmit digital photographs of aircraft performing run-ups inside the GRE
  - Wind speed/direction monitoring and data storage is mounted on a computer rack in the control room.
  - Sound level meter is located in the rack in the control room to monitor noise levels within the GRE. The microphone is on the north wall.
- HVAC: A ductless, wall-mounted heat pump is provided for heating and cooling the control room.

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AIRPORTS & BLAST PROTECTION

- Miscellaneous:
  - Spill kit
  - First-aid kit.
  - Stand-alone eye wash.

### Electrical System

#### GRE Lighting

- Security low-level lighting is provided within the GRE. The lights are on a photocell and remain on during hours of darkness. A manual maintenance test override switch is located in the control room.
- Operational Lighting: Lighting is provided within the GRE with HID cutoff fixtures. The operational lighting is turned on by activating motion sensors within the GRE. The lights will remain on for a preset time. The operational lights are on a photocell to prevent their use during the daytime. Maintenance test override switches are provided within the equipment room for testing the photocell.
- Obstruction Lights: Red obstruction lights are provided along the top of the GRE structure. They are controlled by a photocell and will remain on after dark. A maintenance test override switch is provided in the control room.
- Exit Lights: Exit lights are provided over each egress door in the GRE. They are connected to the photocell and will remain on after dark. A maintenance test override switch is provided in the control room.
- Grounding: A continuous ground is provided for steel GRE structures, including the jet blast deflector.