



**Department of Defense  
Noise Program  
Current Actions and Future  
Needs**

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# Overview

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- **Background**
- **Overview of DOD noise work areas**
- **Current noise modeling related work efforts**
- **Current health and welfare work efforts**
- **Future needs/questions health and welfare**
- **Future needs/questions models and metrics**
- **Conclusions**



# Department of Defense Noise Program (DOD Instruction 4715.13)

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- **Dept of Defense Noise Working Group**
  - Evaluate & advise Deputy Secretary of Defense for Installations and Environment (DUSD (I&E)) on noise related issues having a bearing on DOD's ability to carry out mission requirements
  - Coordinate and provide recommendations on technical and policy issues concerning noise associated with military test & training
- **Key Policies**
  - Reduce adverse effects from noise consistent with maintaining military readiness
  - Promote scientific research and use of sound scientific methods and validated noise data as basis for noise program guidance
  - Leverage resources to the maximum extent possible by ensuring the coordination of DOD noise program initiatives among DOD and other Federal agencies
  - Promote development of initiatives to educate and train DOD military, civilian, contractor personnel and public on noise issues



# Historical Noise Work Areas for DOD

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- **Aircraft and blast noise models**
- **Sonic boom models and monitors**
- **Noise & sonic boom propagation**
- **Noise effects assessments on humans and animals (domestic and wildlife)**
- **Noise effects on structures**



# Current Work Areas for DOD

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- **Current work areas:**
  - **Noise modeling**
  - **Health and Welfare**
  - **Noise reduction-engine design**



# Noise Modeling

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- **What: Aero-Acoustic Complex-Data collection facility; 300 ft and 1200 ft towers able to accept largest transport aircraft**
- **Who: Air Force Research Laboratory-Wright Patterson AFB**
- **Why: Needed to support collection 3D data for rotary wing and next generation aircraft; provides real time feedback on data quality**
- **Where: White Sands Missile Range, NM**
- **Status: 300 ft towers built and being used; Plan was to build 1200 ft towers at the site but may need to move to another location as they could create hazard to flight**



# Aero-acoustic Research Complex





# Noise Modeling

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- **What: Advanced Acoustics Model (AAM)**
- **Who: Wyle Laboratories with SERDP funding**
- **Why: Needed model that can better account for noise characteristics of next generation aircraft; take advantage of increased computing capability; one model for any kind of metric (Leq, SEL, TA, NA, DNL) instead of a new model for different metrics**
- **Status: Model validated; Awaiting approval to use JSF Data and completion of transition plan**



# Noise Modeling

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- **What:** Airborne Weapons Prediction Model
- **Who:** Wyle Laboratories and Blue Ridge Research and Consulting for Army/funded by SERDP
- **Why:** Need to model noise from air gunnery operations; model must be easy to use, fast and accurate, large areas, many targets; distributed “source” area; real world flight tracks, not modeled
- **Status:** Model completed, issue remains on which noise exposure metrics best describe the noise impacts for air gunnery operations



# Noise Modeling

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- **What:** Optimizer for noise reduction around airfields and surrounding areas
- **Who:** Blue Ridge Research and Consulting/ Penn State and Whitley, Bradley and Brown Consulting for Naval Air Warfare Center with SBIR program funding
- **Why:** Need a system to objectively model and assess operational noise reduction methods while balancing community noise reduction with non-standard operational procedures
- **Status:** Phase II in progress: application ready for use; continued work includes software development to improve automation, performance, and user interface



# Health and Welfare

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- **Completed Technical bulletins/Guides**
  - Guide to Using Supplemental Metrics
  - Sleep Disturbance
  - Annoyance
- **Technical Bulletins in progress**
  - Non auditory Health Effects of Residential Aircraft Noise Exposure
  - Speech Interference due to Aircraft Noise
  - Human Hearing Loss from subsonic Noise
  - Role of Ambient Noise in Aircraft Noise Exposure Assessments
  - Model and Metrics for Non-Airfield Noise Assessments
- **Methodology for assessing potential hearing loss in community from military airfield noise**
- **Community Attitudes to Army blast noise**



# **Future Needs/Questions Health and Welfare**

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- **Acoustic and non acoustic health effects**
- **Science based methodology for determining significant impact triggers for alternatives in NEPA documents**
- **Applicability of sleep disturbance thresholds to daytime sleepers**
- **How do people perceive non-linear noise propagation? Does it manifest differences in annoyance levels?**
- **Is annoyance response around military airfield operations the same as civil aviation airfields?**



# **Future Needs/Questions**

## **Noise modeling/metrics**

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- **Appropriate metric for human impacts in “away areas” i.e. ranges, special use airspace**
- **Long term cumulative metric for blast noise to determine cumulative impacts/land use compatibility**
- **Is there a better metric to represent annoyance (supplemental metric?)**



# **Future Needs/Questions National Parks and Wilderness**

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- **Update to past AF research findings with recent research**
- **Review past research to determine gaps in**
- **Translate past research into information that can be used by the field or translated into policy**



# **Future Needs/Questions**

## **Social Costs**

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- **Noise impacts to property values both near and away from airfields**



# Conclusions from an Agency Perspective

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- **Avoid the “self licking ice cream cone” syndrome**
  - Need to have a defined customer
  - Have a defined problem that drives the need for the research; Identify the questions that will be answered
  - Be able to answer the question- What is the impact if not funded?
- **Make sure the final product contains a section written for the layman**
  - Summarizes the problem,
  - The questions needing to be answered
  - What the findings are
  - How this information can be applied by the Agency



# Conclusions from an Agency Perspective

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- **Application of findings proposed for use by Fed Agencies should be coordinated with other Agencies**
  - Be aware of potential unintended consequences on others (both policy and fiscal)
- **More research isn't always the answer; make all possible attempts to use existing research**