Provided by NASA Technical Reports Server

N90-24873³⁻⁷¹
=75405
13.

HUMAN RESPONSE RESEARCH UPDATE

Paul D. Schomer U.S. Army Construction Engineering Research Laboratory

U.S. ARMY CERL

HUMAN RESPONSE RESEARCH UPDATE

METHODOLOGY
SOURCES
FACILITIES
RESULTS

METHODS

- PAIRED COMPARISON
- BAND-LIMITED WHITE NOISE
- HAYSTACK PATTERN
- VARIABLE LENGTH

SOURCES

- HELICOPTER 500Hz OCTAVE BAND
 1 MINUTE DURATION
 VARIABLE 10 dB DOWN
- BLAST 200 1500Hz WHITE NOISE
 ½ SECOND DURATION
 FIXED SHAPE

INSTRUMENTATION

- COMPUTER CONTROLS
 - TIMING (LIGHTS)
 - CONTROL SOURCE
 - MICROPHONE GAINS
 - DATA ANALYSES
- MACHINE READ QUESTIONNAIRES

TESTS

- HELICOPTER
 - CHAMPAIGN UH1H 200 SUBJECTS
 - CALIFORNIA UH1H, UH1N, CH-46, CH-53 A/D CH53 E, AH-1G - 600 SUBJECTS
- BLAST
 - CHAMPAIGN 5 HOUSE CONFIGURATION 300 SUBJECTS
 - GRAFFENWOHR W. GERMANY
 2 HOUSE CONFIGURATIONS
 150 SUBJECTS
 - ABERDEEN PROVING GROUNDS NEW

RESULTS

- RATTLE
- LOUDNESS
- DETECTION (BACKGROUND)

NEW FACILITY ABERDEEN PROVING GROUNDS

- WOOD HOUSE
- MASONRY HOUSE (GERMAN) EACH WITH
 2 "APARTMENTS", GERMAN & AMERICAN
- OUTDOORS

5 LOCATIONS TOTAL (25 SUBJECTS)

★ NO NEAR NEIGHBORS

OUR TESTS

- BLAST NOISE
 - WINDOWS
 - WALLS

APG - SOURCES

- IN LINE WITH CROSS-RUNWAY
 - HELICOPTERS FLYOVER, TAKE OFF, LAND
 - BLAST
 - FIXED-WING FLYOVER, TAKE OFF, LAND
 - VEHICLES (PARTIAL)
 - ANY RECORDED SOURCES

- FUTURE USES OF APG
 COMPARATIVE SOURCES
- NEVADA SITE

REFERENCES

- 1. Schomer, Paul D.; and Neathammer, Robert D.: The Role of Helicopter Noise-Induced Vibration and Rattle in Human Response. Journal of the Acoustical Society of America, 81(4), April 1987, pp. 966-976.
- 2. Schomer, Paul D.; and Averbuck, Aaron: Indoor Human Response to Blasé Sounds that Generate Rattles. Journal of the Acoustical Society of America, 86(2), August 1989, pp. 665-673.
- 3. Schomer, Paul D.: On a Theoretical Interpretation of the Prevalence Rate of Noise-Induced Annoyance in Residential Populations -- High-Amplitude Impulse-Noise Environments. Journal of the Acoustics Society of America, 86(2), August 1989, pp. 835-836.