AD-A041 800 DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA F/G 13/2
ENVIRONMENTAL POLLUTION: AIR POLLUTION - EXHAUST GASES.(U)
JUL 77
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1 OF 4
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AD-A041 800

ENVIRONMENTAL POLLUTION

AIR POLLUTION - EXHAUST GASES

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JULY 1977

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SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER DDC/BIB 77/08	2. GOVT ACCESSION NO. AD-A041 800	3. RECIPIENT'S CATALOG NUMBER
4. TITLE *(and Subtitle)* ENVIRONMENTAL POLLUTION: AIR POLLUTION - EXHAUST GASES		5. TYPE OF REPORT & PERIOD COVERED Bibliography April 1959 - July 1976
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s)		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Defense Documentation Center Cameron Station Alexandria, Virginia 22314		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 65801S
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE July 1977
		13. NUMBER OF PAGES 295
14. MONITORING AGENCY NAME & ADDRESS*(if different from Controlling Office)*		15. SECURITY CLASS. *(of this report)* Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

Supersedes AD-771 710

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

*Bibliographies	Hydrocarbons	Jet Engines
*Exhaust Gases	Nitrogen Oxides	Helicopter Engines
*Air Pollution	Passenger Vehicles	Rocket Engines
Waste Gases	Aircraft	Smoke
Carbon Monoxide	Aircraft Engines	Environmental Pollution

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This bibliography contains citations of reports dealing with exhaust gases, air pollution from exhaust gases emanating from ground to air transportation, exhaust systems of jet engines, helicopters, turbojet engines and rocket motors. Corporate Author-Monitoring Agency, Subject, Title and Personal Author Indexes are provided.

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UNCLASSIFIED

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F O R E W O R D

This bibliography consists of 220 selected unclassified and unlimited citations of reports on *Environmental Pollution: Air Pollution - Exhaust Gases.*

References were taken from entries processed into the Defense Documentation Center's AD data bank during the period of January 1953 to May 1977.

This bibliography supersedes DDC report bibliography on *Environmental Pollution: Air Pollution - Exhaust Gases,* AD-771 710, DDC-TAS-73-77, dated December 1973.

Individual entries are arranged in AD number sequence under the heading AD Bibliographic References. Computer-generated indexes of Corporate Author-Monitoring Agency, Subject, Title and Personal Author are provided.

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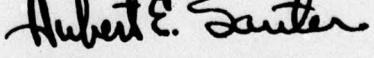

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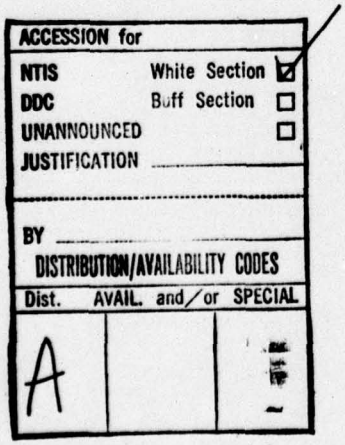

C O N T E N T S

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 412 442
AEROJET-GENERAL CORP AZUSA CALIF

TOXIC HAZARDS EVALUATION OF TITAN II TEST FIRINGS: METHODS AND RESULTS OF LABORATORY AND FIELD INVESTIGATIONS. (U)

JUN 63 70P WETHERINGTON,R.;NOLE,D.A.; ROBY,H.;LONGLEY,M.Y.;KENNEBECK,M.;
REPT. NO. REPT. NO. 2552
CONTRACT: AF33 616 7836
PROJ: 6302
TASK: 630205
MONITOR: AMRL TDR63 52

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON TOXIC HAZARDS OF PROPELLANTS AND MATERIALS.

DESCRIPTORS: (*ROCKET MOTORS (LIQUID PRO, HAZARDS), (*EXHAUST GASES, DETERMI), GUIDED MISSILE PERSONNEL, NITROGEN, DIOXIDES, AIR POLLUTION, TETROXIDES, GAS ANALYSIS, CHROMATOGRAPHIC, COOLANTS, CHEMICAL ANALYSIS, SOILS, CARBON DIOXIDE, CARBON MONOXIDE INDICATORS, CYANIDES, GRASSES, VEGETABLES, HYDRAZINES, HYDRAZINE DERIVATIVES, INFRARED SPECTROPHOTO, MASS SPECTROSCOPY, SAMPLERS, METEORO, EXPERIMENTAL DATA, GUIDED, HYPERGOLIC, TEST FACILITIES, TEST, CAPTIVE TESTS, CONTAMINATION, TOXICITY. (U)
IDENTIFIERS: TITAN (U)

TOXICOLOGICALLY SIGNIFICANT ENVIRONMENTAL CONTAMINANTS NEAR TITAN II TEST-STAND FACILITIES WERE STUDIED, WITH SPECIALLY DEVELOPED FIELD AND LABORATORY TECHNIQUES, PRIMARILY TO DETERMINE THE DEGREE OF HAZARD ASSOCIATED WITH EXHAUST CON STITUENTS. FOR EXHAUST PRODUCTS THAT WERE IDENTIFIED AND QUANTITATIVELY EVALUATED, IT WAS FOUND THAT NORMAL TEST FIRINGS CREATE NO SIGNIFI CANT PERSONNEL HAZARD IN TEST AREAS AND THAT, WITH PROPER TREATMENT PROCEDURES, NO SIGNIFICANT WATER-POLLUTION PROBLEMS ARE CREATED. A METHOD FOR DETERMINING TITAN II TEST-FIRING CONTRI BUTIONS TO A COMMUNITY-AIR-POLLUTION SITUATION WAS ALSO DEVELOPED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 442 981
NATIONAL AERONAUTICAL ESTABLISHMENT OTTAWA (ONTARIO)

SHIP SMOKE STACKS. (U)

JAN 63 33P THORNTON,C. P. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPRINT FROM DME/NAE QUARTERLY BULLETIN 1962 (4). (COPIES SUPPLIED BY DDC)

DESCRIPTORS: (*SHIPS, EXHAUST GASES), (*EXHAUST GASES, SHIPS), SHIP MODELS, GAS FLOW, SIMULATION, SMOKE, SHIP DECKS, TEST METHODS, COMBUSTION PRODUCTS, DESIGN, WAKE, VORTICES, VELOCITY, WIND, WIND TUNNEL MODELS, FINS, AERODYNAMIC CHARACTERISTICS (U)
IDENTIFIERS: SMOKE STACKS (U)

A SERIES OF MODEL TESTS OF THE BEHAVIOR OF THE SMOKE PLUMES OF THREE OCEANGOING SHIPS WAS COMPLETED IN THE 15 FOOT VERTICAL LOW SPEED WIND TUNNEL. THE SHIP STACK PROBLEM, THE EXPERIMENTAL TEST PROCEDURES, AND THE PRESENT STATE OF SHIP SMOKE STACK DESIGN ARE REVIEWED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 601 025
CALIFORNIA UNIV LOS ANGELES

PNEUMATIC FUEL ATOMIZATION AS APPLIED TO AUTOMOBILE AIR POLLUTION CONTROL. (U)

DEC 63 1V KOPA,RICHARD D. ;
REPT. NO. DE63 61

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON AIR POLLUTION RESEARCH.

DESCRIPTORS: (*AIR POLLUTION, CONTROL), (*FUELS, ATOMIZATION), (*ENGINE FUEL SYSTEMS COMPONENTS, PNEUMATIC DEVICES), EXHAUST GASES, HYDROCARBONS, COMBUSTION, CONTROL SYSTEMS, INTERNAL COMBUSTION ENGINES, PERFORMANCE(ENGINEERING) (U)

THE PRINCIPLE OF PNEUMATIC FUEL ATOMIZATION AS APPLIED TO INTERNAL COMBUSTION ENGINE CARBURETION WAS CONCEIVED DURING RESEARCH ACTIVITY CONCERNED WITH EXHAUST GAS RECYCLING AND ITS EFFECTS ON ENGINE PERFORMANCE. THE GOAL WAS TO FIND A SOLUTION TO THE ENGINE POWER SURGING PROBLEM, A PHENOMENON RESULTING FROM EXHAUST GAS RECYCLING AS A METHOD OF NITROGEN OXIDE CONTROL. THE BENEFIT APPEARS TO BE TWOFOLD, NAMELY, BESIDES ELIMINATION OF THE POWER SURGING, THE EXPERIMENTS WITH PNEUMATIC FUEL ATOMIZATION POINTED OUT A NEW WAY TO EFFECTIVE CONTROL OF UNBURNED HYDROCARBONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 604 595
AMERICAN AIR FILTER CO INC LOUISVILLE KY

FEASIBILITY STUDY OF COLLECTIVE PROTECTION FOR COMMAND POST VEHICLES. (U)

DESCRIPTIVE NOTE: MONTHLY PROGRESS REPT. NO. 1, 1-31 JUL 64.
AUG 64 13P
CONTRACT: DA18 035AMC275A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*AIR POLLUTION, VEHICLES), (*VEHICLES, DECONTAMINATION), FEASIBILITY STUDIES, DESIGN, CONTAMINATION, PRESSURE, AIR CONDITIONING EQUIPMENT, TEST EQUIPMENT (U)
IDENTIFIERS: AIR PURIFICATION SYSTEMS (U)

FIRST MONTH WORK CONSISTED OF PRELIMINARY MEETINGS WITH CRDL; LITERATURE SEARCH OF STATE-OF-THE-ART CONCEPTS AT CRDL LIBRARY; VEHICLE ACCESS ARRANGEMENTS MADE AT FORT KNOX, KY. AND CRDL; PRELIMINARY AIR FLOW TEST ON AIR LOCK; DESIGN AND FABRICATION OF LEAKAGE TEST APPARATUS AND ADAPTERS; U. S. GOVERNMENT PROPERTY MANUAL, PREPARED, SUBMITTED AND APPROVED BY GOVERNMENT PROPERTY ADMINISTRATOR. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 612 018
GENERAL DYNAMICS/ASTRONAUTICS SAN DIEGO CALIF

THE FAR FIELD OF A ROCKET EXHAUST JET AT LOW AND MODERATE ALTITUDES. (U)

DEC 64 55P BOYNTON, FREDERICK P. ;
REPT. NO. GDA-DBE64-067 ,SR-1
CONTRACT: AF 19(628)-4360, ARPA ORDER-363
PROJ: AF-8662
MONITOR: AFCRL , 65-66

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*EXHAUST GASES, ROCKETS), (*JET MIXING FLOW, EXHAUST GASES), TURBULENCE, FLUID MECHANICS, CHEMICAL REACTIONS, MATHEMATICAL PREDICTION, PROGRAMMING (COMPUTERS), BOUNDARY VALUE PROBLEMS, COMBUSTION, ATMOSPHERES, JETS (U)
IDENTIFIERS: DEFENDER PROJECT, SHARPNESS, SHEAR (U)

A METHOD IS GIVEN FOR PREDICTING THE FLOW FIELD OF A ROCKET EXHAUST PLUME AT DISTANCES FAR REMOVED FROM THE NOZZLE EXIT AT ALTITUDES WHERE AFTERBURNING OF THE EXHAUST IS APPRECIABLE. THE CALCULATION COMBINES A FLUID MECHANICAL ANALYSIS OF TURBULENT MIXING DUE TO LIBBY WITH THE ADIABATIC FLAME TEMPERATURE CALCULATION OF BOYNTON AND NEU. THE EDDY VISCOSITY IS DETERMINED FROM A CONSIDERATION OF CONDITIONS UNDER WHICH COMPRESSIBLE TURBULENT FLOWS APPEAR TO EXHIBIT SELF-PRESERVING BEHAVIOR. INSTRUCTIONS ARE GIVEN FOR PREPARING INPUT TO TWO COMPUTER PROGRAMS WHICH ARE BASED ON THE ANALYSIS IN THE REPORT. IN TWO APPENDICES, IT IS SHOWN HOW THE EDDY VISCOSITY CONSTANTS MAY BE DERIVED FROM INCOMPRESSIBLE JET FLOW DATA AND A COMPARISON OF THE RESULTS OF THE PRESENT CALCULATION WITH EXPERIMENTAL WIND-TUNNEL ROCKET EXHAUST BEHAVIOR IS GIVEN. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 618 572
MASSACHUSETTS INST OF TECH CAMBRIDGE

ATMOSPHERIC POLLUTION BY OZONE: ITS EFFECTS AND VARIABILITY. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
MAY 65 78P BRANDI,HENRY WILLIAM ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: AVAILABLE COPY WILL NOT PERMIT FULLY LEGIBLE REPRODUCTION. REPRODUCTION WILL BE MADE IF REQUESTED BY USERS OF DDC. COPY IS AVAILABLE FOR PUBLIC SALE.

DESCRIPTORS: (*OZONE, AIR POLLUTION), (*AIR POLLUTION, OZONE), EXHAUST GASES, TOXICITY, PHOTOCHEMICAL REACTIONS, UPPER ATMOSPHERE, TRANSPORT PROPERTIES, MEASURING INSTRUMENTS, ELECTROCHEMISTRY, SAMPLERS, URBAN AREAS, GAS FILTERS, CHROMIUM COMPOUNDS, OXIDES, METEOROLOGICAL PHENOMENA, HALOGENS (U)
IDENTIFIERS: CHROMIUM TRIOXIDE (U)

SURFACE OZONE CONCENTRATIONS WERE MEASURED IN THE BOSTON-CAMBRIDGE COMPLEX FOR THE MONTHS OF NOVEMBER AND DECEMBER, 1964 AND JANUARY, 1965. THE INSTRUMENTATION USED WAS A MAST OZONE METER AND RECORDER; A CHROMIUM TRIOXIDE FILTER WAS FITTED TO THE AIR INLET OF THE METER TO REMOVE NEGATIVELY INTERFERING SULPHUR DIOXIDE. THE EFFECTIVENESS OF THIS FILTER WAS REMARKABLY APPARENT IN THAT REMOVAL OF THE FILTER CAUSED OZONE REDUCTIONS OF 50-100%. THE OVERALL RANGE OF OZONE LEVELS FOR THE THREE MONTHS WAS 0.1 TO 6.4 PPHMV (PART PER HUNDRED MILLION BY VOLUME), WELL BELOW TOXIC LIMITS DISCUSSED IN DETAIL IN THIS THESIS. THE AVERAGE VALUES FOR EACH OF THE THREE MONTHS INDICATE A POSSIBLE CORRELATION WITH THE TOTAL OZONE TREND. VARIATION OF THE DAILY VALUES IS DISCUSSED WITH SOME METEOROLOGICAL FACTORS AS WELL AS SOURCE STRENGTH. SEVEN SIMULTANEOUS MEASUREMENTS OF SOME OF THE HALOGENS, OBTAINED FROM A SEPARATE STUDY BY A COLLEAGUE, ARE RELATED TO OZONE CONCENTRATIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 620 940
WESTINGHOUSE RESEARCH LABS PITTSBURGH PA

DETECTION OF LIQUID CRYSTAL GASES (REACTIVE MATERIALS). (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR 1 FEB-12 NOV 64, AUG 65 125P FERGASON,J. L. ;GOLDBERG,N. N. ;JONES,C. H. ;RUSH,R. S. ;SCALA,L. C. ;
CONTRACT: AF30 603 3306
PROJ: 5534
TASK: 553402
MONITOR: RADC , TR-64-569

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*AIR POLLUTION, GAS DETECTORS), (*GAS DETECTORS, CRYSTALS), FATTY ACID ESTERS, CHOLESTERYL ESTERS, GASES, HYDROCHLORIC ACID, HYDROGEN COMPOUNDS, FLUORIDES, HYDRAZINE, DIMETHYL HYDRAZINE (1-1), NITROGEN COMPOUNDS, DIOXIDES, VAPORS, COLORS, ROCKET PROPELLAN(U)
IDENTIFIERS: FLUORIDES, HYDROGEN, LIQUID CRYSTALS (U)

A SET OF REACTIVE LIQUID CRYSTAL MATERIALS WERE DEVELOPED WHICH ARE CAPABLE OF DETECTING QUANTITIES (10 PPM OR LESS) OF HCL, HF, HYDRAZINE, UDMH, AND NITROGEN DIOXIDE. THE MATERIALS EXHIBIT A CHANGE IN COLOR TRANSITION TEMPERATURE UPON EXPOSURE TO THESE CONTAMINANT GASES OR VAPORS. EXCEPT FOR HF AND HCL, THE CONTAMINANTS ARE READILY DISTINGUISHED FROM EACH OTHER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 625 447 8/5 13/2
SCRIPPS INSTITUTION OF OCEANOGRAPHY UNIV OF CALIFORNIA LA JOLLA

CONCENTRATIONS OF COMMON LEAD IN GREENLAND SNOWS. (U)

65 5P MUROZUMI,M. ;CHOW,T. J. ; PATTERSON,C. ;
CONTRACT: NONR-2216(23)
PROJ: NR-083-005

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN SYMPOSIUM ON MARINE CHEMISTRY, NARRAGANSETT MARINE LABORATORY, GRADUATE SCHOOL OF OCEANOGRAPHY, RHODE ISLAND UNIV. OCCASIONAL PUB. NO. 3-1965 P213-5. COPIES TO DDC USERS ONLY.
SUPPLEMENTARY NOTE:

DESCRIPTORS: (*LEAD(METAL), AIR POLLUTION), (*AIR POLLUTION, LEAD(METAL)), GREENLAND, COMBUSTION PRODUCTS, HYDROCARBONS, EXHAUST GASES, AEROSOLS, SNOW, GEOCHEMISTRY (U)

REPRINT: CONCENTRATIONS OF COMMON LEAD IN GREENLAND SNOWS.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 627 927 4/1 16/1
PACIFIC MISSILE RANGE POINT MUGU CALIF

DIFFUSION OF CONTAMINATION FROM A SOURCE OF FINITE EXTENT. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,
FEB 66 34P LUDLOFF,H. F. ;
REPT. NO. PMR-TM-65-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DIFFUSION, AIR POLLUTION), (*GUIDED, AIR POLLUTION), (*AIR POLLUTION, GUIDED MISSILE RANGES), EXHAUST GASES, TOXICITY, ATMOSPHERES, TRANSPORT PROPERTIES, MICROMETEOROLOGY, MATHEMATICAL ANALYSIS (U)

DIFFUSION OF CONTAMINATION FROM A SOURCE OF FINITE EXTENT.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 630 205 14/2 13/2 21/8.2
GCA TECHNOLOGY DIV GCA CORP BEDFORD MASS

ATMOSPHERIC TRANSPORT OF ROCKET MOTOR COMBUSTION BY-PRODUCTS. VOLUME I. DATA ANALYSIS AND PREDICTION TECHNIQUE. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 65 159P CRAMER,H. E. ;HAMILTON,H. L. ,JR.;DESANTO,G. M. ;
CONTRACT: N123(61756)34567 (PMR),

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*TEST FACILITIES, SOLID PROPELLANT ROCKET ENGINES), (*AIR POLLUTION, TEST FACILITIES), SITE SELECTION, TOXICITY, TRACER STUDIES, CALIFORNIA, BERYLLIUM COMPOUNDS, OXIDES, ZINC COMPOUNDS, DIFFUSION, CADMIUM COMPOUNDS, SULFIDES, MICROMETEOROLOGY, CAPTIVE TESTS (U)
IDENTIFIERS: CADMIUM ZINC SULFIDE (U)

THE DEVELOPMENT OF A DIFFUSION MODEL AND TECHNIQUES FOR PREDICTING ATMOSPHERIC CONTAMINANT CONCENTATIONS AND DOSAGES AT LONG DISTANCES DOWNWIND FROM A SHORT-DURATION SOURCE ON SAN NICOLAS ISLAND, CALIFORNIA ARE DESCRIBED. THIS DEVELOPMENT WAS REQUIRED TO ASSIST IN THE DETERMINATION OF THE SUITABILITY OF SAN NICOLAS ISLAND AS A SITE FOR STATIC TESTING OF TOXIC FUEL. THE MODEL IS BASED ON MEASUREMENTS MADE DURING A FIELD PROGRAM USING A NONTOXIC TRACER (ZINC CADMIUM SULFIDE), ON THE RESULTS OF EARLIER FIELD PROGRAMS, AND ON THEORETICAL WORK. THE SUBSIDENCE INVERSION LAYER OF THE SUB-TROPICAL HIGH PRESSURE CELL NORMALLY OVERLYING THIS AREA AND THE DISTURBED WIND FLOW REGIME IN THE LEE OF THE ISLAND INTRODUCED UNIQUE FEATURES TO THIS DIFFUSION PROBLEM. VOLUME I CONTAINS THE THEORETICAL BACKGROUND, DATA ANALYSIS, AND A DESCRIPTION OF THE DEVELOPMENT OF AN OPERATIONAL MODEL FOR DIFFUSION PREDICTION. THE PROBLEM OF CLOUD DEPLETION THROUGH GRAVITATIONAL SETTLING AND OTHER PHENOMENA ARE DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 631 181 13/2 16/1 4/2
PACIFIC MISSILE RANGE POINT MUGU CALIF

THREE-DIMENSIONAL, ANALYTIC SOLUTIONS TO THE PROBLEMS OF DIFFUSION OF WIND-DRIVEN CONTAMINATION. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,
APR 66 26P LUDLOFF,H. F. ;
REPT. NO. PMR-TM-66-4,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON STUDY OF DIFFUSION OF CONTAMINATION FROM A SOURCE OF FINITE EXTENT, CONT. OF PMR-TM-65-4.

DESCRIPTORS: (*AIR POLLUTION, DIFFUS[illegible], (*WIND, AIR), (*GUIDED MISSILE RANGES, AIR POLLUTION, DUST, AEROSOLS, WASTE GASES, EQUATIONS, CONTAMINATION, GUIDED MISSILE SAFETY, SOURCES, STATISTICAL (U)

ESTIMATES OF CRITICAL DISTANCES, UP TO WHICH DUST, AEROSOLS, AND (TOXIC) FUMES MAY BE DRIVEN, UNDER THE INFLUENCE OF VARIOUS WIND AND DIFFUSIVITY CONDITIONS, REQUIRE THAT THREE-DIMENSIONAL SOLUTIONS TO THE PROBLEM OF WIND-DRIVEN CONTAMINATION BE DERIVED, FOR APPLICATION TO RANGE SAFETY PROBLEMS. THE FOLLOWING WORK WAS DIRECTED TO THIS END: (1) ANALYTIC SOLUTIONS FOR CONSTANT WIND AND CONSTANT DIFFUSIVITY WERE DERIVED; (2) THREE - DIMENSIONAL ANALYTIC SOLUTIONS WERE DERIVED, UNDER THE ASSUMPTION THAT WIND SPEED AND EDDY DIFFUSIVITY VARY, EITHER IN ACCORDANCE WITH THE CONJUGATE POWER LAWS, OR IN A MORE GENERAL FASHION; (3) A NEW METHOD OF SOLUTION IS SUGGESTED WHICH MAY BE USED FOR SOLVING DIFFUSION PROBLEMS OF A MORE GENERAL NATURE; (4) FIVE PARTICULAR, THREE-DIMENSIONAL PARABOLIC SOURCE SOLUTIONS WERE DERIVED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 640 444 21/2 13/2 21/4
CALIFORNIA UNIV BERKELEY THERMAL SYSTEMS DIV

OXIDES OF NITROGEN IN ENGINE EXHAUST WITH AMMONIA FUEL. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 66 27P SUTTON,R. ;STARKMAN,E. S. ;
REPT. NO. TR-7,TS-66-4
CONTRACT: DA-04-200-AMC-791(X),

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON AMMONIA FUEL.

DESCRIPTORS: (*EXHAUST GASES, NITROGEN COMPOUNDS), (*NITROGEN COMPOUNDS, OXIDES), (*AMMONIA, COMBUSTION), FUELS, COMBUSTION PRODUCTS, DECOMPOSITION, REACTION KINETICS, SAMPLERS, SPECTROPHOTOMETERS, AIR POLLUTION(U)

AT MAXIMUM OUTPUT, MORE OXIDES OF NITROGEN ARE PRODUCED BY COMBUSTION OF AMMONIA THAN WITH HYDROCARBON FUELS. THIS IS PARTLY A RESULT OF PEAK POWER OCCURRING AT LOW MIXTURES WITH AMMONIA. DISPROPORTIONATE QUANTITIES OF NITROGEN OXIDES WHICH ARE ENCOUNTERED WITH AMMONIA AT LEAN MIXTURE RATIOS INDICATE A PROBABLE RESULT OF THE DIRECT PRODUCTION OF NO IN THE AMMONIA PYROLYSIS SCHEME. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 646 587 6/21 1/2
ARMY AEROMEDICAL RESEARCH UNIT FORT RUCKER ALA

APPROACH TO THE EVALUATION OF TOXIC HAZARDS FROM WEAPONS EXHAUST IN ARMED HELICOPTERS. (U)

NOV 66 21P HODY,G. L. ;
REPT. NO. USAARU-67-5
PROJ: DA-3A0-2560-1A-819
TASK: 051

UNCLASSIFIED REPORT

DESCRIPTORS: (*WEAPON SYSTEMS, EXHAUST GASES), (*EXHAUST GASES, TOXICITY), HAZARDS, HELICOPTERS, POISONOUS GASES, CARBON MONOXIDE, PERFORMANCE(HUMAN), CONFINED ENVIRONMENTS, CONTAMINATION (U)

THE COMPLEXITY OF FLYING AND THE ENVIRONMENTAL STRESSES ENCOUNTERED BY PILOTS OF ARMED HELICOPTERS ARE CONTINUING CHALLENGES. UNDER SUCH DIFFICULT CONDITIONS ANY INTERFERENCE WITH MENTAL OR SENSORY CAPABILITIES OF THE PILOTS CAN BE REFLECTED IN AN INCREASED CASUALTY RATE. HELICOPTER MOUNTED WEAPONS RELEASE A TOXIC EXHAUST WHICH COULD DISTURB VISION AND HEARING AND MIGHT ADVERSELY AFFECT REACTION TIME AND THE REASONING PROCESS. A BRIEF EXPLORATORY STUDY CONFIRMED THE IMPRESSION THAT THE WEAPONS EXHAUST CAN REACH THE CREW IN MEASURABLE CONCENTRATIONS. AN OBJECTIVE ASSESSMENT OF THE HAZARD IS OBVIOUSLY NEEDED BEFORE COSTLY OR INCONVENIENT CORRECTIVE MEASURES NEED BE CONSIDERED. A CAREFUL SEARCH FAILED TO REVEAL EXISTING METHODS FOR THE REQUIRED EVALUATION WHICH INVOLVES CONTINUOUS MEASUREMENT OF RAPIDLY CHANGING CONTAMINANT CONCENTRATIONS IN A CONFINED AND VIBRATING ENVIRONMENT. AN EXPERIMENTAL PROGRAM DESIGNED TO EXPLORE A TECHNIQUE FOR MEETING THE OPERATIONAL REQUIREMENT IS BEING IMPLEMENTED IN COOPERATION WITH THE AIR FORCE ROCKET PROPULSION LABORATORY. WHILE THE POTENTIAL FOR A HAZARDOUS SITUATION IS VERY REAL IN ALL ARMED AIRCRAFT, THE CONCERN IS WITH THE NEW, EXPERIMENTAL HELICOPTERS, EQUIPPED WITH MULTIPLE RAPID FIRE WEAPONS SYSTEMS, IN ADDITION TO THOSE ARMED HELICOPTERS NOW DEPLOYED IN THE FIELD. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 658 570 13/12 19/3
ARMY MEDICAL RESEARCH LAB FORT KNOX KY

TEST OF CARBON MONOXIDE HAZARD FROM ENGINE IN LIGHT TANK, M24, (U)

APR 45 6P WALPOLE, ROBERT H. ;
PROJ: T-7

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXHAUST GASES, *HAZARDS), (*TANKS(COMBAT VEHICLES), TANK ENGINES), CARBON MONOXIDE, SAFETY, POISONING, DESIGN, EXHAUST PIPES, VENTILATION, WIND (U)

THE PURPOSE OF THE REPORT IS TO INVESTIGATE THE CARBON MONOXIDE HAZARD IN THE FIGHTING COMPARTMENT OF SUBJECT VEHICLE FROM CONTAMINATION BY EXHAUST FUMES. HAZARDOUS CARBON MONOXIDE CONCENTRATIONS ARE FOUND WITHIN THE FIGHTING COMPARTMENT FROM EXHAUST GASES ENTERING THE ENGINE AIR INTAKE WHEN THE VEHICLE IS STATIONARY WITH ENGINE IDLING AND WIND IS FROM THE REAR. DANGER OF CREW COMPARTMENT CONTAMINATION FROM THIS SOURCE IS LARGELY ELIMINATED THROUGH CHANGES IN DIRECTION OF DISCHARGE OF ENGINE EXHAUST GASES TO PREVENT SHORT-CIRCUITING TO THE AIR INTAKE. RECOMMENDATIONS ARE TO REDESIGN EXHAUST TAIL PIPE TO ELIMINATE CONTAMINATION OF AIR ENTERING FIGHTING COMPARTMENT BY ENGINE EXHAUST FUMES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 658 637 13/12 19/3
ARMY MEDICAL RESEARCH LAB FORT KNOX KY

CARBON MONOXIDE HAZARD FROM AUXILIARY GENERATORS IN TANKS, (U)

APR 43 5P NELSON,NORTON ;SWIGERT,T. C. ;
PROJ: 3-12

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. 'DETERMINATION OF THE CARBON MONOXIDE HAZARD FROM AUXILIARY GENERATORS IN TANKS.'

DESCRIPTORS: (*TANKS(COMBAT VEHICLES), HAZARDS), (*GENERATORS, *CARBON MONOXIDE), SAFETY, EXHAUST GASES, PROTECTION, EXHAUST PIPES, TOXIC TOLERANCES, LEAKAGE(FLUID), WIND (U)

THE PURPOSE OF THE REPORT IS TO DETERMINE THE MAGNITUDE OF THE CARBON MONOXIDE HAZARD RESULTING FROM OPERATION OF AUXILIARY GENERATORS IN TANKS WHEN THE TANK MOTOR IS NOT RUNNING. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 662 123 6/20 21/9 6/5
NAVAL MEDICAL RESEARCH INST BETHESDA MD

TOXICOLOGICAL ASPECTS OF MISSILES AND NUCLEAR SUBMARINE WARFARE, (U)

64 7P BALDRIDGE,H. DAVID , JR;
PROJ: NAVMED-MR005.14-4001.06
TASK: MR005.14-5001.06-1

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN MILITARY MEDICINE V130 N5 P505-11 1965.
SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE ANNUAL MEETING OF THE ASSOCIATION OF MILITARY SURGEONS OF THE U.S. (71ST) WASHINGTON, D. C., 20-22 OCT 64.

DESCRIPTORS: (*ROCKET PROPELLANTS, TOXICITY), OXIDIZERS, WEAPON SYSTEMS, BALLISTIC MISSILE SUBMARINES, CONFINED ENVIRONMENTS, EXHAUST GASES, HYDRAZINE, NUCLEAR POWERED SHIPS, CLOSED ECOLOGICAL SYSTEMS, HAZARDS, AIR POLLUTION, MILITARY MEDICINE (U)

ONE OF THE CHARACTERISTICS OF NEW FORMS OF WARFARE IS THE ENCAPSULATION OF MEN AND MACHINES UNDER CONDITIONS OF TOXICOLOGICAL SIGNIFICANCE. MILITARY CHEMISTS AND TOXICOLOGISTS HAVE BECOME MEMBERS OF WEAPON RESEARCH AND DEVELOPMENT TEAMS IN AN EFFORT TO INSURE THAT HAZARDOUS CHEMICALS WILL BE CONTROLLED IN THE DEPLOYMENT OF SUCH WEAPONS TO THE LIMIT PERMITTED BY OPERATIONAL REQUIREMENTS. IN ROCKET OPERATIONS WHERE LAWS OF GAS DYNAMICS REQUIRE THE USE OF LARGE QUANTITIES OF TYPES OF CHEMICAL COMPOUNDS WHICH ARE INHERENTLY HAZARDOUS TO MAN, THE ROLE OF THE CHEMIST AND TOXICOLOGIST IS PRIMARILY ONE OF CREW PROTECTION AGAINST AN ACUTE HAZARD POTENTIAL. WITH CLOSED ATMOSPHERES SUCH AS THOSE ABOARD SUBMARINES AND OTHER ENCAPSULATED WEAPONS SYSTEMS WHERE EMPHASIS IS ON POSSIBLE CHRONIC INHALATION TOXICITY, GREATER CONSIDERATION IS GIVEN TO ACTUAL SELECTION OF CHEMICAL MATERIALS BY DESIGN ENGINEERS AND TO THE CONDITIONS OF USAGE. OUT OF SUCH EXPERIENCES IN THE DEVELOPMENT AND OPERATIONAL DEPLOYMENT OF WEAPONS AND FROM LABORATORY STUDIES WHICH ATTEMPT TO DEFINE THE LIMIT OF MAN'S ABILITY TO ENDURE CHEMICAL MANIPULATION OF HIS NATURAL ENVIRONMENT, THERE WILL CONTINUE TO BE LAID DOWN A FIRM FOUNDATION UPON WHICH DESIGN PARAMETERS FOR FUTURE WEAPONS AND CLOSED ECOLOGICAL SYSTEMS WILL BE BASED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 665 105 13/2 13/6
RAND CORP SANTA MONICA CALIF

APPROACHES TO DEALING WITH MOTOR VEHICLE AIR POLLUTION: REPORT OF THE SUBPANEL TRANSPORTATION SYSTEM REQUIREMENTS OF THE PANEL ON ELECTRICALLY POWERED VEHICLES. (U)

DEC 67 57P BLUM,EDWARD H. ;
REPT. NO. P-3776

UNCLASSIFIED REPORT

DESCRIPTORS: (*PASSENGER VEHICLES, *AIR POLLUTION), (*ELECTRIC MOTORS, PASSENGER VEHICLES), TRANSPORTATION, URBAN AREAS, ECONOMICS, PUBLIC OPINION, EFFECTIVENESS, COSTS, INTERACTIONS, CONTAMINATION, FEASIBILITY STUDIES (U)
IDENTIFIERS: RAPID TRANSIT (U)

THE PURPOSE OF THE REPORT IS TO DEVELOP A STYLE OR REASON FOR VEHICULAR POLLUTION POLICY. THE REPORT TREATS ASPECTS OF VEHICULAR POLLUTION NOT DIRECTLY CONCERNED WITH SPECIFIC TECHNOLOGY--AND CONSTRUCTS A SYSTEMATIC FRAMEWORK WITHIN WHICH THE VEHICULAR POLLUTION PROBLEM CAN BE SEEN AND ANALYZED AS A WHOLE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 667 557 21/5 1/3 13/2
AEROSPACE RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

MICROSCOPIC PARTICLE SEPARATION AND APPLICATIONS. (U)

FEB 68 80P POPLAWSKI,ROBERT ;MILLER, ROGER A. ;
REPT. NO. ARL-68-0024
PROJ: AF-7116
TASK: 711600

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE MEETING ON HELICOPTER PROPULSION SYSTEMS, SPONSORED BY THE AGARD PROPULSION AND ENERGETICS PANEL, OTTAWA, CANADA, 10-4 JUN 68.

DESCRIPTORS: (*GAS TURBINES, INGESTION(ENGINES)), (*AIRCRAFT ENGINES, *INGESTION(ENGINES)), (*AIR POLLUTION, SEPARATION), DUST, PARTICLES, ENGINE AIR SYSTEMS COMPONENTS, SEA WATER, ENVIRONMENTAL TESTS, DESIGN, TEST METHODS, SALT SPRAY TESTS, TRANSPORT AIRCRAFT, HELICOPTERS, VERTICAL TAKEOFF AIRCRAFT, AVIATION SAFETY (U)
IDENTIFIERS: *PARTICLE SEPARATION, SEPARATORS, TRADEOFFS (U)

THE APPLICATION OF ULTRA-MICROSCOPIC PARTICLE SEPARATION STUDIES RANGES FROM THE PROTECTION OF TURBINE ENGINES FROM DUST AND/OR SEA SPRAY TO APPLICATIONS IN THE FIELD OF AIR POLLUTION. THE PAPER PRESENTS NOT ONLY THE THEORY OF THESE DEVICES AND LABORATORY EXPERIMENTAL RESULTS, BUT ALSO FIELD TESTING RESULTS ON SELECTED UNITS. THE IMPORTANT TRADE-OFFS BETWEEN DESIGN PARAMETERS AND THE SELECTION PROCESSES REQUIRED TO TAILOR A DUST SEPARATOR TO A SPECIFIC APPLICATION ARE DISCUSSED AND OTHER IMPORTANT AREAS OF APPLICATION ARE SUGGESTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 668 053 13/2 4/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

QUESTIONS OF ATMOSPHERIC DIFFUSION AND AIR POLLUTION: SELECTED ARTICLES. (U)

SEP 67 40P
REPT. NO. FTD-MT-24-186-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF GLAVNAYA GEOFIZICHESKAYA OBSERVATORIYA, LENINGRAD. TRUDY (USSR) N172 P23-34, 42-7, 74-8 1965.

DESCRIPTORS: (*AIR POLLUTION, METEOROLOGICAL PHENOMENA), (*ATMOSPHERIC MOTION, AIR POLLUTION), POWER PLANTS(ESTABLISHMENTS), WASTE GASES, SULFUR COMPOUNDS, DIOXIDES, INORGANIC ACIDS, WIND, DIFFUSION, USSR (U)
IDENTIFIERS: SULFUROUS ACID, TRANSLATIONS (U)

CONTENTS: RESULTS OF ANALYSIS OF EXPERIMENTAL DATA CHARACTERIZING THE DISTRIBUTION OF ATMOSPHERIC POLLUTIONS NEAR THE THERMAL ELECTRIC POWER STATIONS; ANALYSIS OF DISPERSION OF HORIZONTAL OSCILLATIONS OF THE WIND DIRECTION; THE QUESTION OF HORIZONTAL SCATTERING OF IMPURITY IN THE ATMOSPHERE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 672 356 6/3 8/6
STANFORD RESEARCH INST MENLO PARK CALIF

CONCENTRATIONS OF CARBON MONOXIDE AND ORGANIC GASES IN ARCTIC ATMOSPHERES. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 MAY 67-30 APR 68,
APR 68 29P CAVANAGH,LEONARD A. ;
CONTRACT: N00014-67-C-0515
PROJ: NR-307-313, SRI-PRU-6689

UNCLASSIFIED REPORT

DESCRIPTORS: (*ARCTIC REGIONS, *AEROBIOLOGY), ATMOSPHERIC MOTION, AIR POLLUTION, CARBON MONOXIDE, ORGANIC COMPOUNDS, GAS ANALYSIS, METEOROLOGICAL PHENOMENA (U)

INVESTIGATIONS HAVE BEEN CONDUCTED ON THE CONCENTRATIONS OF CARBON MONOXIDE AND HYDROCARBONS OF LOW MOLECULAR WEIGHT IN 'CLEAN' ARCTIC AIR, AND THEIR PATTERNS AS FUNCTIONS OF METEOROLOGICAL PARAMETERS HAVE BEEN INTERPRETED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 674 644 1/3 1/2
DYNASCIENCES CORP BLUE BELL PA

INVESTIGATION OF THE DOWNWASH ENVIRONMENT GENERATED BY V/STOL AIRCRAFT OPERATING IN GROUND EFFECT. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JUL 68 149P GEORGE,M. ;KISIELOWSKI,E. ;
DOUGLAS,D. S. ;
REPT. NO. DCR-275
CONTRACT: DA-44-177-AMC-316(T)
PROJ: DA-1-T-021701-A-047
MONITOR: USAAVLABS TR-68-52

UNCLASSIFIED REPORT

DESCRIPTORS: (*HELICOPTERS, DOWNWASH), (*VERTICAL TAKEOFF AIRCRAFT, DOWNWASH), (*AIR POLLUTION, HOVERING), GROUND EFFECT, DUST, MATHEMATICAL MODELS, TRANSPORT AIRCRAFT, RESEARCH PLANES, VISIBILITY, MASS TRANSFER, FLOW FIELDS (U)
IDENTIFIERS: C-142 AIRCRAFT, H-21 AIRCRAFT, V-5 AIRCRAFT, XC-142 AIRCRAFT, X-19 AIRCRAFT, X-22A AIRCRAFT, X-22 AIRCRAFT, XV-5A AIRCRAFT (U)

ANALYTICAL METHODS ARE DEVELOPED FOR DETERMINING THE DOWNWASH ENVIRONMENT GENERATED BY MULTIROTOR/PROPELLER V/STOL AIRCRAFT CONFIGURATIONS OPERATING IN GROUND PROXIMITY. THESE METHODS ARE UTILIZED TO COMPUTE ROTOR FLOW FIELD AND CONTAMINANT DUST CLOUD CHARACTERISTICS (INCLUDING PARTICLE DENSITY AND SIZE DISTRIBUTIONS) FOR THE H-21, XC-142, X-22A, X-19A, AND XV-5A AIRCRAFT. THE EFFECTS OF THE CONTAMINATED ATMOSPHERE ON PILOT'S VISIBILITY, GROUND EQUIPMENT, AND PERSONNEL ARE ALSO DETERMINED FOR THESE AIRCRAFT. THE THEORETICALLY PREDICTED RESULTS ARE GENERALLY IN GOOD AGREEMENT WITH THE LIMITED TEST DATA. ADDITIONAL FULL-SCALE TEST DATA ARE REQUIRED TO VERIFY FURTHER THE ASSUMPTIONS INHERENT IN THE THEORY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 680 747 13/2
RAND CORP SANTA MONICA CALIF

INCREASE OF EXCHANGEABLE CARBON IN THE EARTH'S RESERVOIRS FROM COMBUSTION OF FOSSIL FUELS, (U)

DEC 68 25P DUGAS,DORIS J. ;
REPT. NO. P-3990

UNCLASSIFIED REPORT

DESCRIPTORS: (*CARBON DIOXIDE, ATMOSPHERES), (*AIR POLLUTION, CARBON DIOXIDE), MATHEMATICAL MODELS, HYDROCARBONS, FUELS, OCEANS, SURFACE PROPERTIES, DEPOSITS, SOILS, GEOLOGIC AGE DETERMINATION, RADIOACTIVE ISOTOPES, CARBON, PERIODIC VARIATIONS, ATMOSPHERIC TEMPERATURE, INDUSTRIES, SOURCES, ABSORPTION (U)
IDENTIFIERS: FOSSIL FUELS (U)

THE DISTRIBUTION OF EXCESS CARBON DIOXIDE PRODUCED DURING AND AFTER THE CONSUMPTION OF ALL FOSSIL FUEL IS DETERMINED WITH THE AID OF A FOUR-RESERVOIR MODEL OF CARBON EXCHANGE AS DEVELOPED PREVIOUSLY FOR CARBON-14. FROM ESTIMATES OF THE TOTAL HYDROCARBON FUEL RESOURCES ORIGINALLY ON EARTH, IT IS CALCULATED THAT ABOUT 3000 BILLION TONS OF CARBON ULTIMATELY MAY BE RELEASED TO THE ATMOSPHERE FROM THIS SOURCE. CARBON EXCESS IN THE SURFACE LAYERS OF THE OCEAN REACHES A PEAK A FEW YEARS LATER THAN THE ATMOSPHERE AND RETAINS SOMEWHAT LESS OF THE EXCESS CARBON AT EQUILIBRIUM, WHILE THE DEEP SEA EVENTUALLY ABSORBS OVER 90 PERCENT OF THE EXCESS CARBON RELEASED BY FOSSIL FUEL CONSUMPTION. IT WAS FOUND THAT THE RESULTS ARE HIGHLY SENSITIVE TO THE ASSUMPTIONS AS TO FUTURE FOSSIL FUEL CONSUMPTION RATES, BUT THAT THE ATMOSPHERIC CARBON CONCENTRATION IS NOT CRITICALLY AFFECTED BY THE AMOUNT OF DIRECT EXCHANGE BETWEEN THE ATMOSPHERE AND DEEP SEA. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 686 459 6/20 21/9.1 13/2
OREGON STATE UNIV CORVALLIS RADIATION CENTER

STUDIES ON ENVIRONMENTAL POLLUTION BY MISSILE PROPELLANTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. MAY 64-JUN 67, FEB 69 37P DOST,FRANK N. ;REED,D. J. ;WANG,C. H. ;
CONTRACT: AF 33(615)-1767
PROJ: AF-6302
TASK: 630204
MONITOR: AMRL TR-68-85

UNCLASSIFIED REPORT

DESCRIPTORS: (*LIQUID ROCKET PROPELLANTS, *TOXICITY), (*HALOGEN COMPOUNDS, TOXICITY), (*NITROGEN COMPOUNDS, TOXICITY), PLANTS(BOTANY), FISHES, BACTERIA, AIR POLLUTION, LIQUID ROCKET OXIDIZERS, HYDRAZINE DERIVATIVES, BROMINE COMPOUNDS, FLUORIDES, CHLORINE COMPOUNDS, MICROORGANISMS (U)
IDENTIFIERS: BROMINE PENTAFLUORIDE, CHLORINE PENTAFLUORIDE, CHLORINE TRIFLUORIDE, *ENVIRONMENTS, *POLLUTION, *FLUORINE INORGANIC COMPOUNDS, FLUORINE OXIDE, HYDRAZINE TETRAFLUORIDE, HALOGEN COMPOUNDS, FLUORIDES, NITROGEN COMPOUNDS (U)

THE EFFECTS OF SINGLE EXPERIMENTAL EXPOSURES OF PLANTS, FISH AND MICROORGANISMS TO MEMBERS OF A GROUP OF INORGANIC FLUORIDE OXIDIZING AGENTS HAVE BEEN SUMMARIZED. THE INFORMATION OBTAINED HAS ENABLED ESTIMATION OF THE DAMAGE TO BE EXPECTED AS A RESULT OF SINGLE ACCIDENTAL EXPOSURES IN THE FIELD. THESE AGENTS--NITROGEN TRIFLUORIDE (NF3), TETRAFLUOROHYDRAZINE (N2F4), OXYGEN DIFLUORIDE (OF2), CHLORINE TRIFLUORIDE (CLF3), BROMINE PENTAFLUORIDE (BRF5), AND CHLORINE PENTAFLUORIDE (CLF5)--VARY IN CHEMICAL BEHAVIOR AND BIOLOGICAL EFFECTS. NF3 IS RELATIVELY INNOCUOUS; OF2 MUST BE AVOIDED ABSOLUTELY BY ANIMALS AND PLANTS, AND BOTH ARE QUITE STABLE CHEMICALLY. THE INTERHALOGENS REACT READILY IN CONTACT WITH ENVIRONMENTAL CONSTITUENTS, AND WHILE DESTRUCTIVE AT THE SITE OF INITIAL CONTACT, THEY ARE SELF LIMITING IN EFFECT. N2F4 ALSO REACTS EASILY, BUT SHOULD CAUSE ONLY MODERATE DAMAGE. PLANT INJURY IN ALL CASES WOULD PROBABLY BE LIMITED TO THE CURRENTLY GROWING CROP, WITH LITTLE POSSIBILITY OF CARRY-OVER EFFECTS IN SOIL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 689 079 13/2
WARREN SPRING LAB STEVENAGE (ENGLAND)

AIR POLLUTION ABSTRACTS A12568-A12656. (U)

FEB 69 31P

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *ABSTRACTS), HYDROCARBONS, AEROSOLS, CONTAMINATION, WASTE GASES, DIFFUSION, GAS CHROMATOGRAPHY, INSTRUMENTATION, SULFOXIDES, PARTICLES, TRACER STUDIES, CHEMICAL PROPERTIES, GREAT BRITAIN (U)

THE REPORT CONTAINS ABSTRACTS ON AIR POLLUTION EFFECTS; IDENTIFICATION; MEASUREMENT; METHODS AND EQUIPMENT FOR ABATEMENT, ETC.; PREPARED BY THE MINISTRY OF TECHNOLOGY, STEVENAGE, ENGLAND. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 698 913 7/5 13/2
CALIFORNIA UNIV RIVERSIDE DEPT OF CHEMISTRY

SINGLET OXYGEN IN THE ENVIRONMENTAL SCIENCES SINGLET MOLECULAR OXYGEN AND PHOTOCHEMICAL AIR POLLUTION, (U)

NOV 68 11P PITTS,J. N. , JR.;KHAN, AHSAN U. ;SMITH,BRIAN ;WAYNE,RICHARD P. ;
CONTRACT: DA-ARO(D)-31-124-G804
PROJ: DA-2-0-061102-B-11-B
MONITOR: AROD 6223:16-P

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN ENVIRONMENTAL SCIENCE AND TECHNOLOGY, V3 N3 P241-247 MAR 69.
SUPPLEMENTARY NOTE: REVISION OF REPORT DATED 20 JUL 67.

DESCRIPTORS: (*AIR POLLUTION, *PHOTOCHEMICAL REACTIONS), (*OXYGEN, AIR POLLUTION), REVIEWS, ALKENES, NITROGEN OXIDES, URBAN AREAS, OZONE, PHOTOLYSIS, EXHAUST GASES, MOLECULAR ENERGY LEVELS (U)
IDENTIFIERS: AUTOMOBILE EXHAUST, CHEMICAL REACTION MECHANISMS, NITROGEN OXIDE(NO2), NITROGEN OXIDE(NO), PHOTOCHEMICAL REACTIONS, SINGLET ENERGY LEVELS (U)

SINGLET MOLECULAR OXYGEN (SINGLET O2) MAY PLAY A SIGNIFICANT ROLE AS AN OXIDANT IN PHOTOCHEMICAL AIR POLLUTION. REACTION OF ELECTRONICALLY EXCITED OXYGEN WITH OLEFINIC SUBSTANCES PRODUCES THERMALLY UNSTABLE HYDROPEROXIDES WHICH MAY BE INVOLVED IN THE RAPID CONVERSION OF NO INTO NO2, A PROCESS NOT WELL UNDERSTOOD IN PHOTOCHEMICAL AIR POLLUTION. SEVERAL MECHANISMS FOR THE FORMATION OF SINGLET O2 ARE EXAMINED CRITICALLY IN RELATION TO THEIR POSSIBLE IMPORTANCE IN THE CHEMISTRY OF URBAN ATMOSPHERES. IN EACH, THE EXCITATION ENERGY IS DERIVED ULTIMATELY FROM THE SUN'S RADIATION, BUT THE ENERGY MAY BE UTILIZED BY DIRECT ABSORPTION OF RADIATION BY GROUND STATE TRIPLET O2 BY PHOTOLYSIS OF AN ATMOSPHERIC CONTAMINANT TO FORM EXCITED SINGLET O2 IN THE PRIMARY STEP, BY SPIN-CONSERVED ENERGY TRANSFER MECHANISM IN WHICH AN ATMOSPHERIC CONTAMINANT ABSORBS SOLAR RADIATION AND TRANSFERS ITS EXCITATION TO GROUND STATE TRIPLET O2, OR BY EXOTHERMIC CHEMICAL REACTIONS INVOLVING ATMOSPHERIC CONTAMINANTS WHICH THEMSELVES ORIGINATED IN A PHOTOCHEMICAL PROCESS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 699 297 13/6 21/2 13/2
EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZURICH (SWITZERLAND)
INSTITUT FUER HYGIENE UND ARBEITSPHYSIOLOGIE

(CALIFORNIA-TEST). BEKAEMPFUNG DER LUFTVERUNREINIGUNG DURCH KONTROLLMABNAHMEN AN NEUEN MOTORFAHRZEUGTYPEN IN DEN VEREINIGTEN STAATEN VON AMERIKA (CALIFORNIA TEST. COMBATING AIR POLLUTION BY MEANS OF DEVICES ON NEW MOTOR VEHICLE TYPES IN THE U. S.). (U)

66 8P MUELLER, VON THOMAS TH. ;

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN NEUE ZUERCHER ZEITUNG, BLATT 4 N5168 8P, 29 NOV 66. NO COPIES FURNISHED.
SUPPLEMENTARY NOTE: TEXT IN GERMAN.

DESCRIPTORS: (*PASSENGER VEHICLES, COMBUSTION PRODUCTS), (*AIR POLLUTION, CONTROL SYSTEMS), HYDROCARBONS, SPARK IGNITION ENGINES, TEST METHODS, TEST EQUIPMENT, MODIFICATION KITS, DESIGN, AUTOMATIC, UNITED STATES, SWITZERLAND (U)
IDENTIFIERS: CONTROL (U)

AN ACCOUNT IS GIVEN OF AUTOMOTIVE RESEARCH AIMED AT THE REDUCTION OF AIR POLLUTION FROM EXHAUST GASES BY MEANS OF NEW ENGINE DESIGN AND CONTROL METHODS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 699 360 21/2
ARMY ENVIRONMENTAL HYGIENE AGENCY EDGEWOOD ARSENAL MD

ATMOSPHERIC SAMPLING STUDY OF NF ROCKET PROPELLANT, REDSTONE ARSENAL, HUNTSVILLE, ALABAMA, 26 MAY-26 JUNE 1969. (U)

DESCRIPTIVE NOTE: AIR POLLUTION ENGINEERING STUDY,
69 38P WIENER,HOWARD A. ;BARTELL, ROBERT P. ;HESS,THOMAS L. ;PORTS,KENNETH N.
;
REPT. NO. USAEHA-STUDY-99-003-69/70

UNCLASSIFIED REPORT

DESCRIPTORS: (*ROCKET PROPELLANTS, *EXHAUST GASES), (*AIR POLLUTION, ROCKET PROPELLANTS), (*FLUORIDES, EXHAUST GASES), CARBON MONOXIDE, ALUMINUM COMPOUNDS, FLUOROAMINES (U)
IDENTIFIERS: ALUMINUM FLUORIDES, ALUMINUM CHLORIDES, FLUORIDES, HYDROGEN, *ROCKET EXHAUST (U)

A FIELD STUDY WAS CONDUCTED TO MEASURE THE CONCENTRATION OF AND DETERMINE AREAS OF EXPOSURE TO TOTAL FLUORIDES IN THE EXHAUST CLOUD OF STATICALLY FIRED SIX POUND MOTORS UTILIZING A DEVELOPMENTAL ROHM AND HAAS NF PROPELLANT. RESULTS OF THE STUDY GAVE STRONG INDICATIONS THAT ONLY AREAS EXPOSED TO THE VISIBLE EXHAUST WOULD BE CONTAMINATED BY FLUORIDES. THE STUDY RESULTS ALSO INDICATED THAT ALL FLUORIDES IN THE EXHAUST WERE PREDOMINANTLY IN THE GASEOUS STATE. AREAS OF GREATEST EXHAUST CLOUD TOTAL FLUORIDE CONCENTRATION WERE FOUND TO BE AT THE APPROXIMATE LOCATION WHERE THE CLOUD WAS INITIALLY FORMED. IN THE FIRING TESTS CONDUCTED, EXPOSURE TO THE CLOUD AT ANY POINT WITHIN ITS PATH WAS DETERMINED TO BE LESS THAN ONE MINUTE IN ALL CASES OBSERVED. IT WAS ESTIMATED THAT AREAS AT DISTANCES GREATER THAN 150 METERS FROM THE FIRING POINT OF THE SIX-POUND MOTORS WOULD NOT BE SIGNIFICANTLY EXPOSED TO FLUORIDES FROM THE EXHAUST. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 701 067 21/5 21/4
LEASCO SYSTEMS AND RESEARCH CORP NEW YORK

FUEL ADDITIVE ATOMIZATION IN JET ENGINE TAILPIPES. (U)

DESCRIPTIVE NOTE: FINAL REPT. AUG 68-NOV 69,
JAN 70 38P COLE,PHILLIP ;PARMET,IRWIN ;
REPT. NO. 51502
CONTRACT: F19628-68-C-0376
PROJ: AF-8679
TASK: 867902
MONITOR: AFCRL 70-0031

UNCLASSIFIED REPORT

DESCRIPTORS: (*TURBOJET ENGINES, *EXHAUST PIPES), (*JET ENGINE FUELS, FUEL ADDITIVES), (*FUEL ADDITIVES, *ATOMIZATION), LIQUID JETS, FUEL INJECTION, MATHEMATICAL ANALYSIS, EXHAUST GASES, MATHEMATICAL MODELS, PARTICLE SIZE (U)

THE REPORT INCLUDES A REVIEW OF THE TECHNICAL LITERATURE RELATING TO THE MODELLING OF THE ATOMIZATION PROCESS, AN ANALYSIS OF THE DIFFERENCES BETWEEN CONDITIONS STUDIED IN THE REPORTS AND THOSE FOUND IN JET EXHAUSTS, AND, FINALLY, RECOMMENDATIONS FOR FOLLOW-UP STUDIES DESIGNED TO MODIFY EARLY MODELS AS A CONSEQUENCE OF THOSE DIFFERENCES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 701 759 21/7 1/3
NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC CITY N J

ACCELERATED TESTING OF GENERAL AVIATION ENGINE EXHAUST SYSTEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
FEB 70 42P SLUSHER,GERALD ;
REPT. NO. NA-70-23
PROJ: FAA-520-003-01X
MONITOR: FAA-DS 70-2

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIRCRAFT ENGINES, *EXHAUST SYSTEMS), CAPTIVE TESTS, TEST METHODS, HEAT EXCHANGERS, EXHAUST GASES, FAILURE(MECHANICS), DESIGN, CORROSION INHIBITION, CHROMIUM ALLOYS, IRON ALLOYS, NICKEL ALLOYS, VENTILATION, ENGINE MUFFLERS (U)
IDENTIFIERS: AIRCRAFT, LIGHTWEIGHT, *GENERAL AVIATION AIRCRAFT (U)

AN ACCELERATED TEST PROCEDURE WAS DEVELOPED FOR POSSIBLE USE TO ENHANCE AND DEMONSTRATE THE AIRWORTHINESS OF EXHAUST SYSTEMS OF SINGLE-ENGINE AIRCRAFT INCORPORATING EXHAUST GAS-TO-AIR HEAT EXCHANGERS. THE EXHAUST SYSTEMS OF SEVEN AIRCRAFT WERE ENDURANCE TESTED ON ENGINE STANDS TO DETERMINE IF THE TYPES AND TIMES OF FAILURES OCCURRING DURING THE TESTS WERE SIMILAR TO FAILURES OCCURRING IN AIRCRAFT AND TO IDENTIFY DESIGN FEATURES FOR MINIMIZING HAZARDS. EVALUATION OF AN EXHAUST SYSTEM FABRICATED OF A MORE CORROSION-RESISTANT MATERIAL WAS INCLUDED. TESTING WAS CONDUCTED EITHER UNTIL FAILURE OCCURRED OR 600 TEST HOURS WERE ACCUMULATED. THE ACCELERATED TEST SCHEDULE AND PROCEDURE PRODUCED FAILURES COMPARABLE TO THOSE OCCURRING IN AIRCRAFT WITH 1 HOUR OF TESTING EQUIVALENT ON THE AVERAGE TO 3.8 HOURS OF OPERATION IN AIRCRAFT. IT WAS CONCLUDED THAT THE UTILIZATION OF MORE CORROSION-RESISTANT, NICKEL-IRON-CHROMIUM MATERIAL WOULD SIGNIFICANTLY REDUCE OR ELIMINATE THOSE EXHAUST SYSTEM FAILURES RESULTING FROM HIGH-TEMPERATURE OXIDATION OR CORROSION, AND THAT MUFFLER FAILURES AND RELATED CARBON MONOXIDE HAZARDS COULD BE MINIMIZED BY THE DESIGN AND CONSTRUCTION OF AIRTIGHT CABIN VENTILATING SYSTEMS IN CONJUNCTION WITH THE INCORPORATION OF MUFFLER DESIGNS OF THE AXIAL FLOW THROUGH TYPE FABRICATED OF A MORE CORROSION-RESISTANT MATERIAL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 703 564 13/6
RAND CORP SANTA MONICA CALIF

THE AUTOMOBILE'S ROLE IN THE FUTURE, (U)

MAR 70 8P HULT, JOHN L. ;
REPT. NO. P-4332

UNCLASSIFIED REPORT

DESCRIPTORS: (*TRANSPORTATION, *PASSENGER VEHICLES), URBAN AREAS, COMMUNICATION SYSTEMS, ELECTRONICS, SHOCK ABSORBERS, AIR POLLUTION (U)
IDENTIFIERS: RAPID TRANSIT SYSTEMS (U)

THE PAPER EXPLORES THE COMPETITION BETWEEN VARIOUS MODES OF TRAVEL AS A FUNCTION OF RANGE AND BETWEEN TRAVEL AND ELECTRONICS FOR COMMUNICATING. AN EVOLUTIONARY DEVELOPMENT OF OUR MEANS OF TRAVEL IS DESCRIBED WHICH WOULD INTRODUCE NEW CONCEPTS FOR IMPROVING THE CAPACITY AND CAPABILITY OF OUR URBAN TRANSPORTATION SYSTEMS WHILE MOLLIFYING UNWANTED SIDE EFFECTS. A FREEWAY EXPRESS TRANSIT IS OUTLINED WHICH WOULD BETTER USE THE ALREADY HUGE INVESTMENT COMMITMENTS IN LAND, EQUIPMENT, AND SOCIAL WAY OF LIFE THAT HAVE MADE THE AUTOMOBILE SUCH AN IMPORTANT FACTOR. IT WOULD RETAIN THE EMINENT ROLE OF THE AUTOMOBILE WHILE EVOLVING THE TRANSPORTATION SYSTEMS TOWARD MORF SOCIALLY SATISFYING MEANS.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 704 126 21/9 13/2 7/2
OREGON STATE UNIV CORVALLIS RADIATION CENTER

STUDIES ON ENVIRONMENTAL POLLUTION BY MISSILE PROPELLANTS. (U)

DESCRIPTIVE NOTE: FINAL REPT., 1 JUL 67-30 JUN 69, JAN 70 45P DOST,FRANK N. ;CHIH H. WANG,;
CONTRACT: F33615-67-C-1750
PROJ: AF-6302
TASK: 630204
MONITOR: AMRL TR-69-116

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *ROCKET PROPELLANTS), (*LIQUID ROCKET OXIDIZERS, *TOXICITY), (*PLANTS(BOTANY), AIR POLLUTION), DECONTAMINATION, GASEOUS ROCKET PROPELLANTS, CHLORINE COMPOUNDS, FLUORIDES, NITROGEN COMPOUNDS, OXYGEN COMPOUNDS, WATER, FISHES (U)
IDENTIFIERS: FLUORIDES, NITROGEN COMPOUNDS, *CHLORINE FLUORIDES, FLUORINE OXIDE, HYDRAZINE TETRAFLUORIDE, TRIFLUOROAMINE OXIDE (U)

THE EFFECTS OF NF3O ON LOWER ORGANISMS HAVE BEEN SURVEYED. THE GAS CAUSES MINIMUM DAMAGE TO PLANTS WHEN EXPOSED FOR 30 MINUTES TO CONCENTRATIONS AS LOW AS 5 PPM. EFFECTS ON GOLDFISH MAINTAINED IN AQUARIA UNDER 1% NF3O FOR 30 MINUTES WERE NEGLIGIBLE; SALMON WERE MODERATELY SENSITIVE. MICROORGANISMS IN SOIL WERE ONLY SLIGHTLY DECREASED IN NUMBERS BY ONE HOUR OF EXPOSURE BY CONTINUOUSLY TUMBLING SOIL PARTICLES THROUGH 1% NF3O. POTENTIALLY USEFUL DECONTAMINATION REASTIONS WERE STUDIED. INTERHALOGENS AND N2F4 CAN PROBABLY BE REMOVED FROM THE ATMOSPHERE BY A MIST OF AQUEOUS SODIUM BICARBONATE SOLUTION. NO REAGENT PORTABLE ENOUGH AND SUFFICIENTLY EFFECTIVE TO REMOVE OF2 AND NF3O GAS FROM THE ATMOSPHERE WAS FOUND. NF3 IS VIRTUALLY NON-REACTIVE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 705 217 7/4 11/6
OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUS

HIGH TEMPERATURE ELECTROCHEMICAL RESEARCH IN METALLURGY, (U)

APR 70 32P BOOSTEIN,W. M. ;RAPP,R. A. ;ST. PIERRE,G. R. ;
CONTRACT: F33615-70-C-1103, ARPA ORDER-1466

UNCLASSIFIED REPORT

DESCRIPTORS: (*METALLURGY, *ELECTROCHEMISTRY), (*LIQUID METALS, ELECTROCHEMISTRY), (*EXHAUST GASES, ADSORPTION), GASES, OXYGEN, ADSORPTION, IRON, COPPER, PASSENGER VEHICLES (U)
IDENTIFIERS: LIQUID COPPER, *ELECTROLYTES, *FUSED SALTS, AUTOMOBILE EXHAUST, COULOMETRY (U)

THE FOLLOWING FIVE AREAS OF RESEARCH ARE DISCUSSED: A DEVICE FOR THE CONTROL OF OXYGEN ACTIVITIES IN GASES; A STUDY OF CHARACTERISTICS OF COULOMETRIC PUMPING AND THE CONTROL OF ITS RATE INTO HIGH TEMPERATURE GASES; THE COULOMETRIC CONTROL OF OXYGEN IN LIQUID METALS; KINETIC STUDY OF OXYGEN ABSORPTION BY MOLTEN IRON AND IRON ALLOYS; AND THE DESIGN AND TESTING OF AN ELECTROCATALYTIC AFTERBURNER FOR AUTOMOBILE EXHAUST EMISSIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 707 118 1/3 1/1
AIR WEATHER SERVICE SCOTT AFB ILL

INTRODUCTION TO JET-ENGINE EXHAUST AND TRAILING VORTEX WAKES. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
APR 70 34P JONES,DALE N. ;
REPT. NO. AWS-TR-226

UNCLASSIFIED REPORT

DESCRIPTORS: (*JET TRANSPORT PLANES, WAKE), (*JET ENGINES, *EXHAUST GASES), VORTICES, TAXIING, TRAILING EDGE, MANEUVERABILITY, MATHEMATICAL ANALYSIS, REVIEWS(U)
IDENTIFIERS: BOEING 747 AIRCRAFT, C-5 AIRCRAFT (U)

THE REPORT IS A RESULT OF A SURVEY OF THE IMMEDIATELY AVAILABLE LITERATURE ON AIRCRAFT WAKES. WHILE IT SHOULD NOT BE CONSIDERED THE FINAL WORD ON THE SUBJECT, IT IS A GOOD GENERAL REPRESENTATION OF TECHNIQUES AND PROBLEMS INVOLVED. (AUTHOR)
THE SIMPLE, APPROXIMATE RELATIONS USED ARE CHOSEN FOR THEIR SIMPLICITY AND SHOULD RESULT IN AN ACCURACY USEFUL TO DEFINE AREAS DANGEROUS TO FLIGHT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 709 896 6/11 13/10 7/4
NAVAL RESEARCH LAB WASHINGTON D C

CHEMICAL RESEARCH IN NUCLEAR SUBMARINE ATMOSPHERE PURIFICATION. (U)

DESCRIPTIVE NOTE: PROGRESS REPT.,
JUN 70 61P PIATT,V. R. ;RAMSKILL,E. A. ;
REPT. NO. NRL-7037
PROJ: NRL-C08-05, SF35-433-02
TASK: 13213

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO ANNUAL PROGRESS REPT. NO. 5, AD-648 505.

DESCRIPTORS: (*LIFE SUPPORT, *SUBMARINES), (*CONFINED ENVIRONMENTS, CONTAMINATION), (*HYDROCARBONS, AIR POLLUTION), (*CARBON DIOXIDE, AIR POLLUTION), ORGANIC SOLVENTS, FLUOROHYDROCARBONS, UNDERWATER VEHICLES, CONTROL, SAMPLING, PAINTS, HALOGENATED HYDROCARBONS, FIRE RESISTANT COATINGS, CLEANING COMPOUNDS, EXHAUST GASES, GAS CHROMATOGRAPHY, MASS SPECTROSCOPY, MARINE NUCLEAR PROPULSION (U)
IDENTIFIERS: METHANE/DICHLORODIFLUORO, NUCLEAR POWERED SHIPS, SUBMARINES, *AIR POLLUTION CONTROL EQUIPMENT, *AIR POLLUTION DETECTION, *HOPCALITE CATALYSTS (U)

CONSIDERABLE PROGRESS HAS BEEN MADE IN DEVELOPING BOTH LABORATORY AND SHIPBOARD METHODS OF SAMPLING, ANALYSIS, AND CONTROL, BUT MAJOR SHIPBOARD ANALYSTICAL EQUIPMENT CONTINUES TO BE OF MARGINAL QUALITY. SOME OF THE TOPICS COVERED INCLUDE A FIRE-RETARDANT AND NONTOXIC PAINT SYSTEM FOR APPLICATION WHEN NECESSARY DURING SUBMERGENCE, ATMOSPHERIC CONTAMINATION WITH A CLEANING SOLVENT, THE NRL TOTAL HYDROCARBON ANALYZER, CATALYZED COMBUSTION OF VARIOUS TYPES OF ATMOSPHERIC CONTAMINANTS, AND CO2 ABSORPTION PROPERTIES OF SOME NEW AMINES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 710 456 6/11 13
NAVAL RESEARCH LAB WASHINGTON D C

SOURCES AND REMOVAL OF CARBON MONOXIDE IN HYPERBARIC ATMOSPHERES, (U)

DEC 69 14P UMSTEAD, MERLE E. ;MUSICK, JAMES K. ;JOHNSON, J. ENOCH ;
PROJ: AF-6302
MONITOR: AMRL TR-69-130-PAPER-19

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN PROCEEDINGS OF THE ANNUAL CONFERENCE ON ATMOSPHERIC CONTAMINATION IN CONFINED SPACES (5TH) P275-287, 16-18 SEP 69.

DESCRIPTORS: (*CONFINED ENVIRONMENTS, *AIR POLLUTION), (*CARBON MONOXIDE, AIR POLLUTION), (*DEEP SUBMERGENCE, CONFINED ENVIRONMENTS), COMBUSTION PRODUCTS, ADSORPTION, CATALYSTS, GAS CHROMATOGRAPHY, UNDERWATER VEHICLES, COOKING DEVICES (U)
IDENTIFIERS: *MANNED SUBMERSIBLES, AIR POLLUTION CONTROL EQUIPMENT, SEALAB 3 MANNED SUBMERSIBLE, *HOPCALITE CATALYSTS, *INDOOR AIR POLLUTION, DISSOLVED GASES (U)

A STUDY WAS CARRIED OUT ON SOME POTENTIAL SOURCES OF CARBON MONOXIDE IN HYPERBARIC ATMOSPHERES, ITS ANALYSIS, AND ITS REMOVAL FROM THESE ENVIRONMENTS. TOASTING BREAD AND BROILING MEAT HAS BEEN SHOWN TO PRODUCE SIGNIFICANT QUANTITIES OF THIS GAS IN A CLOSED ATMOSPHERE. ACTIVATED CHARCOAL BEDS WHEN OPERATED NEAR ROOM TEMPERATURE PRODUCE VERY LITTLE CO BY REACTIONS OF THE CARBON WITH ATMOSPHERIC OXYGEN. HOWEVER, SIGNIFICANT AMOUNTS OF CO CAN BE PRODUCED IF THE CARBON IS HEATED MUCH IN EXCESS OF 200 F. DISSOLVED CO IN THE OCEAN COULD BE A SOURCE OF THIS GAS IN THE ATMOSPHERE OF UNDERSEA CAPSULES HAVING AN OPEN INTERFACE WITH THE SEA. HOPCALITE CATALYST OPERATED AT 600 F IS AN EFFECTIVE MEANS OF REMOVING CO FROM HIGH PRESSURE HELIUM ATMOSPHERES CONTAINING LOW OXYGEN CONCENTRATION. BY THE USE OF GAS CHROMATOGRAPHY, SENSITIVE METHODS HAVE BEEN DEVELOPED FOR THE ANALYSIS FOR CO AT THE ONE PART PER MILLION LEVEL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 713 222 7/4 14/2
BARKLEY AND DEXTER LABS INC FITCHBURG MASS

RESEARCH DIRECTED TOWARD THE EXPERIMENTAL INVESTIGATION OF METHODS OF ANALYZING SO2:SO3 RATIOS IN JET EXHAUSTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 15 AUG 66-14 AUG 69,
MAY 70 32P DAY,LAWRENCE R. ;DUNTON,
EDWIN C. ;WILSON,RAYMOND B. ;ZINCHUK,MICHAEL
;
CONTRACT: AF 19(628)-6137
PROJ: AF-8679
TASK: 867901
MONITOR: AFCRL 70-0279

UNCLASSIFIED REPORT

DESCRIPTORS: (*JET ENGINES, *EXHAUST GASES), (*AIR POLLUTION, EXHAUST GASES), (*ULTRAVIOLET DETECTORS, *SULFUR COMPOUNDS), TEST METHODS, DIOXIDES, OXIDES, CHEMICAL ANALYSIS, INFRARED DETECTORS, CONCENTRATION(CHEMISTRY), IONIZATION (U)
IDENTIFIERS: *AIR POLLUTION DETECTION, *SULFUR DIOXIDE, *SULFUR TRIOXIDE (U)

RESEARCH WAS DIRECTED TOWARDS THE ANALYSIS OF SO2/SO3 RATIOS IN JET EXHAUSTS AT TEMPERATURES OF 600C AND MACH I GAS STREAMS. SPECTRAL ABSORBANCE MEASURING TECHNIQUES IN THE ULTRA VIOLET REGION OF THE SPECTRUM APPEARED TO OFFER THE BEST METHOD OF MEASUREMENT. EQUIPMENT WAS DESIGNED AND DEVELOPED INCORPORATING THESE TECHNIQUES. OTHER ASPECTS OF JET EXHAUSTS WERE ALSO INVESTIGATED INCLUDING CONTRAIL SCATTERING AND IONIZATION EFFECTS. EQUIPMENT WAS ALSO DEVELOPED FOR THE MEASUREMENT OF INFRARED RADIATION FROM A JET ENGINE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 713 612 21/5
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB OHIO

PARAMETERS AFFECTING THE MEASUREMENT OF AERO ENGINE EXHAUST SMOKE: A STATISTICAL ANALYSIS OF TEST DATA. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. SEP 69-FEB 70,
AUG 70 66P CHAMPAGNE,DONALD L. ;
REPT. NO. AFAPL-TR-70-23
PROJ: AF-3048
TASK: 304805

UNCLASSIFIED REPORT

DESCRIPTORS: (*SMOKE, MEASUREMENT), (*AIRCRAFT ENGINES, *EXHAUST GASES), STATISTICAL ANALYSIS, STANDARDS, REFLECTOMETERS (U)
IDENTIFIERS: *SMOKE ABATEMENT, COMPUTER ANALYSIS (U)

THE REPORT DESCRIBES A COMPUTERIZED STATISTICAL ANALYSIS OF TEST DATA FROM ENGINE SMOKE MEASUREMENTS. THE ANALYSIS INDICATED THAT TEST DATA CAN BE USED TO ARRIVE AT STATISTICALLY MEANINGFUL CONCLUSIONS ABOUT FOUR MEASURING SYSTEM PARAMETERS.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 713 913 13/2
RUTGERS - THE STATE UNIV NEW BRUNSWICK N J EAGLETON INST OF POLITICS

COMPARISON OF AIR POLLUTION FROM AIRCRAFT AND AUTOMOBILES (PROJECT EAGLE). (U)

DESCRIPTIVE NOTE: FINAL REPT.,
SEP 70 189P BRIGHT,COOPER ;LAMMINEN, TOIVO ;MULLALY,JAMES ;MARKOWITZ,FOREST ;SINGER, STANFORD M. ;
CONTRACT: W1-70-1919-1
MONITOR: FAA-NO 70-14

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *EXHAUST GASES), (*AIR TRANSPORTATION, AIR POLLUTION), (*TRANSPORTATION, AIR POLLUTION), (*SHORT TAKEOFF AIRCRAFT, TRANSPORTATION), CONTROL, PASSENGER VEHICLES, CONNECTICUT, NEW JERSEY, NEW YORK, AIRPORTS, ATMOSPHERIC MOTION, CARBON MONOXIDE, DIFFUSION (U)
IDENTIFIERS: MASS TRANSPORTATION, ABATEMENT, *AIR POLLUTION, *CONTROL, *AUTOMOBILE EXHAUST, COMPARISON, *HIGHWAY TRANSPORTATION, *JET ENGINE EXHAUST, EAGLE PROJECT (U)

THIS INVESTIGATION INTO THE ENVIRONMENTAL ASPECTS OF ESTABLISHING AN URBAN AIR TRANSPORTATION SYSTEM FOR THE TRI-STATE AREA OF CONNECTICUT, NEW JERSEY, AND NEW YORK FOR DAILY COMMUTING DEMONSTRATES THAT AIR POLLUTION AND ITS ASSOCIATED PHYSIOLOGICAL EFFECTS, WHICH ARE CREATED BY AUTOMOBILE ENGINE EMISSIONS, CAN BE DRASTICALLY REDUCED. SIMILAR RESULTS PERTAIN WHEN STOL AIR TRANSPORTATION IS SUBSTITUTED FOR AUTOMOBILES TO PROVIDE SERVICE FOR THE SAME AREA TO THE THREE MAJOR AIRPORTS AROUND NEW YORK CITY. FURTHER, THE STUDY SHOWS THAT AIR POLLUTION AT A STOLPORT IN MANHATTAN SUPPORTING SUCH A SYSTEM WOULD BE LESS THAN THE NORMAL BACKGROUND CONCENTRATION, EVEN DURING PEAK TRAVEL PERIODS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 721 858 13/2 4/1
BATTELLE-NORTHWEST RICHLAND WASH PACIFIC NORTHWEST LAB

THE MOUNTAIN IRON DIFFUSION PROGRAM: PHASE 1. SOUTH VANDENBERG: VOLUME 1. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT., NOV 67 289P HINDS,W. T. ;NICKOLA,P. W. ;
REPT. NO. BNWL-572-VOL-1
CONTRACT: AT(45-1)-1830
MONITOR: AFWTR TR-67-1-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: INCLUDES REVISION DATED MAR 69. ERRATA SHEET INSERTED. SEE ALSO VOLUME 2, AD-721 859.

DESCRIPTORS: (*EXHAUST GASES, DIFFUSION), (*ROCKET PROPELLANTS, *AIR POLLUTION), (*LAUNCHING SITES, ROCKET ENGINES), MATHEMATICAL MODELS, ATMOSPHERIC MOTION, SAMPLING, TRACER STUDIES, WEATHER FORECASTING, TOXICITY, HAZARDS, RANGES(FACILITIES), SAFETY, DATA PROCESSING, CALIFORNIA (U)
IDENTIFIERS: MOUNTAIN IRON PROGRAM, ROCKET PROPELLANT RELEASE STUDIES, VANDENBERG AIR FORCE BASE (U)

FIELD DIFFUSION EXPERIMENTS WERE CONDUCTED AT VANDENBERG AIR FORCE BASE, CALIFORNIA, DURING 1965 AND 1966. THIS PROGRAM, NICKNAMED 'MOUNTAIN IRON,' WAS UNDERTAKEN TO ESTABLISH QUANTITATIVE DIFFUSION PREDICTIONS FOR USE AS RANGE SAFETY TOOLS IN THE 'SOUTH VANDENBERG' BALLISTIC AND SPACE VEHICLE OPERATIONS. THE ONLY POLLUTANT SOURCE CHARACTER STUDIED WAS TOXIC PROPELLANT MATERIALS RELEASED CONTINUOUSLY FROM GROUND LEVEL POOLS. THIS VOLUME CONTAINS THE OPERATIONAL APPLICATIONS AND LIMITATIONS OF THE EQUATIONS AND OTHER RESULTS OBTAINED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 721 859 13/2 4/1
BATTELLE-NORTHWEST RICHLAND WASH PACIFIC NORTHWEST LAB

THE MOUNTAIN IRON DIFFUSION PROGRAM: PHASE I. SOUTH VANDENBERG: VOLUME II. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT., JAN 68 228P HINDS,W. T. ;NICKOLA,P. W. ;
REPT. NO. BNWL-572-VOL-2
CONTRACT: AT(45-1)-1830
MONITOR: AFWTR TR-67-1-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-721 858 AND VOLUME 3, AD-721 860.

DESCRIPTORS: (*EXHAUST GASES, DIFFUSION), (*ROCKET PROPELLANTS, *AIR POLLUTION), (*LAUNCHING SITES, ROCKET ENGINES), (*ATMOSPHERIC MOTION, CLIMATE), METEOROLOGICAL PHENOMENA, SAMPLING, MATHEMATICAL MODELS, TRACER STUDIES, TRAJECTORIES, DATA PROCESSING, DETECTORS, RANGES(FACILITIES), CALIFORNIA (U)
IDENTIFIERS: MOUNTAIN IRON PROGRAM, ROCKET PROPELLANT RELEASE STUDIES, VANDENBERG AIR FORCE BASE (U)

THE ADVENT OF AIR FORCE MISSILE OPERATIONS AT SOUTH VANDENBERG BROUGHT THE NEED FOR PREDICTION OF HAZARDS INVOLVED IN NONROUTINE CIRCUMSTANCES. THE PURPOSE OF THE STUDY WAS TO DETERMINE AN EMPIRICAL DIFFUSION EQUATION FOR SOUTH VANDENBERG. THE SCOPE OF THE OPERATION INCLUDED (1) TRACER RELEASES FROM TWO SITES NEAR TWO LAUNCH POINTS AND COLLECTION OF DIFFUSION AND METEOROLOGICAL DATA OVER SOUTH VANDENBERG; (2) REDUCTION AND ANALYSIS OF DIFFUSION AND METEOROLOGICAL DATA FOR SOUTH VANDENBERG. BEYOND THIS, THE ANALYSIS YIELDED ADDITIONAL INFORMATION ON TRAJECTORIES AND WIND SYSTEM STATION SUITABILITY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 721 860 13/2 4/1
BATTELLE-NORTHWEST RICHLAND WASH PACIFIC NORTHWEST LAB

THE MOUNTAIN IRON DIFFUSION PROGRAM: PHASE II. SOUTH VANDENBERG: VOLUME 3. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT., SEP 69 316P DAUBEK,H. G. ;DOTSON,W. L. ;RAMSDELL,J. V. ;NICKOLA,P. W. ;
REPT. NO. BNWL-572-VOL-3
CONTRACT: AT(45-1)-1830
MONITOR: AFWTR TR-67-1-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-721 859.

DESCRIPTORS: (*EXHAUST GASES, DIFFUSION), (*ROCKET PROPELLANTS, *AIR POLLUTION), (*LAUNCHING SITES, ROCKET ENGINES), MATHEMATICAL MODELS, REGRESSION ANALYSIS, ZINC SULFIDES, ATMOSPHERIC MOTION, TRACER STUDIES, HAZARDS, TOXICITY, RANGES(FACILITIES), SAFETY, CLIMATE, CALIFORNIA (U)
IDENTIFIERS: MOUNTAIN IRON PROGRAM, ROCKET PROPELLANT RELEASE STUDIES, VANDENBERG AIR FORCE BASE (U)

A SERIES OF FIELD DIFFUSION EXPERIMENTS CONDUCTED AT VANDENBERG AIR FORCE BASE, CALIFORNIA ARE DISCUSSED. THESE TESTS WERE DESIGNED TO PROVIDE THE NECESSARY DATA FROM WHICH AN EMPIRICAL EQUATION, DERIVED BY MULTIPLE REGRESSION ANALYSIS, HAS BEEN DEVELOPED. THIS EQUATION IS TO BE USED AS A RANGE SAFETY TOOL IN SUPPORT OF MISSILE ACTIVITIES ON THE AIR FORCE WESTERN TEST RANGE AT THE SUDDEN RANCH LAUNCY COMPLEX, SLC-6. THE FIELD EXPERIMENTS UTILIZED A FLUORESCENT PIGMENT, ZINC SULFIDE, U. S. RADIUM CORPORATION DESIGNATION NO. 2210, AS A TRACER. APPROXIMATELY 500 ASPIRATED FILTERS, LOCATED AT 1.5 M ABOVE THE GROUND, WERE INSTALLED ALONG CONCENTRIC ARCS AT 500, 800 AND 1000 M FROM THE SOURCE, AND ALONG ROADWAYS AT GREATER DOWNWIND DISTANCES. THESE SAMPLERS PROVIDED MEASUREMENTS OF THE DOWNWIND TIME-INTEGRATED DISTRIBUTION OF THE TRACER. THESE DATA WERE SUPPLEMENTED BY: GROUND AND AERIAL AIR CONCENTRATION SAMPLING; AND, METEOROLOGICAL DATA FROM SEVERAL SITES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 722 832 21/2 13/2
SOUTHWEST RESEARCH INST SAN ANTONIO TEX

BASELINE EXHAUST EMISSIONS FROM U. S. ARMY M54A2 LDS 465 POWERED FIVE-TON TRUCKS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
APR 69 45P SPRINGER,KARL J. ;
REPT. NO. SWRI-AR-690
CONTRACT: DAAD05-67-C-0361
PROJ: SWRI-08-2073-03

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIESEL ENGINES, *EXHAUST GASES), (*AIR POLLUTION, EXHAUST GASES), (*ODORS, EXHAUST GASES), CARGO VEHICLES, SMOKE, HYDROCARBONS, CARBON MONOXIDE, CARBON DIOXIDE, NITROGEN OXIDES, SULFUR COMPOUNDS, ALDEHYDES, TEST METHODS (U)
IDENTIFIERS: *MOTOR TRUCKS, *SMOKE ABATEMENT, SULFUR DIOXIDE, *DIESEL ENGINE EXHAUST (U)

BASELINE EXHAUST EMISSIONS DATA WERE OBTAINED AS PART OF A 20,000-MI TEST OF LUBE OILS IN FOUR M54A2 FIVE-TON ARMY TRUCKS POWERED BY THE LDS 465 TURBOCHARGED, FOUR-CYCLE, COMPRESSION IGNITION ENGINE. THESE EMISSIONS INCLUDED ODOR, SMOKE AND CHEMICAL/INSTRUMENTAL MEASUREMENTS OF TOTAL UNBURNED HYDROCARBONS, CARBON MONOXIDE, CARBON DIOXIDE, OXIDES OF NITROGEN, NITRIC OXIDE, TOTAL ALIPHATIC ALDEHYDES, FORMALDEHYDE, ACROLEIN AND SULFUR DIOXIDE USING THE LATEST TECHNIQUES AVAILABLE. POWER CHECKS AS WELL AS EMISSIONS WERE OBTAINED AT THE BEGINNING, END, AND AT ABOUT 6,500 AND 12,000 MI DURATION. THE EFFECTS OF VEHICLE OPERATING CONDITION AND TEST MILEAGE ARE PRESENTED AS PART OF THE ANALYSIS OF THE RESULTS. TYPICAL DATA FOR TWO WIDELY USED, COMMERCIAL TRUCK-TRACTORS POWERED BY FOUR-CYCLE, NATURALLY ASPIRATED AND TURBOCHARGED ENGINES ARE INDICATED TO PLACE THE MILITARY TRUCK EMISSIONS IN PERSPECTIVE. LIMITED BACK-TO-BACK TYPE OPERATION OF TWO VEHICLES ON A COMMERCIAL BARIUM SMOKE SUPPRESSANT FUEL ADDITIVE WAS CONDUCTED PERIODICALLY AND THE CONSTANT AND TRANSIENT SMOKE RESULTS ARE PRESENTED. IN ADDITION TO SUMMARY AND CONCLUSIONS, RECOMMENDATIONS ARE MADE TO LEARN MORE ABOUT EXHAUST EMISSIONS FROM VEHICLES IN THE CURRENT AND FUTURE ARMY INVENTORY.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 724 046 4/1 13/2
ISTITUTO DI FISICA DELL'ATMOSFERA ROME (ITALY)

CONDENSATION NUCLEI MEASUREMENTS IN AN URBAN AREA, (U)

MAR 70 7P COLACINO,M. ;FRANCO,R. ; VIVONA,F. M. ;
REPT. NO. IFA-CP-230

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN ATMOSPHERIC ENVIRONMENT, V4 P443-445 1970. NO COPIES FURNISHED BY DDC OR NTIS.

DESCRIPTORS: (*ATMOSPHERES, AEROSOLS), (*AIR POLLUTION, URBAN AREAS), CONDENSATION, NUCLEATION, COUNTING METHODS, HUMIDITY, EXHAUST GASES, HEATING, PARTICLES, ITALY (U)

SYSTEMATIC COUNTINGS OF CONDENSATION NUCLEI WERE CARRIED OUT AT IFA--CHEMICAL LABORATORY (ROME, ITALY) WITH A NOLAN-POLLAK NUCLEI COUNTER. THE DATA WERE ELABORATED EVERY MONTH AND SHOW THAT: (1) DRY WEATHER WITH AN OVERCAST SKY IS GENERALLY ASSOCIATED WITH A LARGE NUMBER OF NUCLEI; ON THE CONTRARY, CLEAR SKY IS ALMOST ALWAYS ASSOCIATED WITH A SMALLER NUMBER OF NUCLEI. THIS BEHAVIOUR IS EXPLAINED BY THE FACT THAT OVERCAST SKY CORRESPONDS TO A SUBSIDENCE SITUATION, WHILE CLEAR SKY IS ASSOCIATED WITH STRONG WINDS, WHICH CAUSE AIR TURBULENCE AND, AS CONSEQUENCES, AIR MIXING AND A DECREASE IN THE CONDENSATION NUCLEI NUMBER; (2) DURING RAIN THE CONDENSATION NUCLEI NUMBER IS LOW DUE TO THE WASH-OUT EFFECT OF THE PRECIPITATION; (3) A REMARKABLE CORRELATION BETWEEN AIR RELATIVE HUMIDITY AND CONDENSATION NUCLEI NUMBER WAS FOUND. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 724 408 7/4
CALIFORNIA UNIV LOS ANGELES DEPT OF CHEMISTRY

PROMISING CATALYST FOR AUTO EXHAUST, (U)

DEC 70 2P LIBBY,W. F. ;
CONTRACT: AF-AFOSR-1255-67
PROJ: AF-9538
MONITOR: AFOSR TR-71-1413

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN SCIENCE, V171 P499-500 FEB 71.

DESCRIPTORS: (*CATALYSTS, *EXHAUST GASES), (*AIR POLLUTION, EXHAUST GASES), (*LANTHANUM COMPOUNDS, CATALYSTS), SYNTHESIS(CHEMISTRY), COSTS, COBALT COMPOUNDS, OXIDES, HYDROCARBONS, ALKENES, GAS FLOW, PASSENGER VEHICLES (U)
IDENTIFIERS: *AIR POLLUTION CONTROL EQUIPMENT, AUTOMOBILE EXHAUST, *CATALYTIC REACTORS(EXHAUST SYSTEMS), COBALTATES, *LANTHANUM COBALTATE (U)

MEADOWCRAFT'S (NATURE V226 P847 1970) REPORT THAT SR(0.2)LA(0.8)COO3 RIVALED PLATINUM AT THE AQUEOUS OXYGEN ELECTRODE HAS LED TO A TEST LACOO3 ITSELF FOR ACTIVITY IN THE GAS PHASE. IT IS REPORTED THAT IT DOES APPEAR TO RIVAL PLATINUM IN THE GAS PHASE AS WELL AND SUGGEST THAT IT SHOULD BE TESTED AS A POTENTIAL AUTO EXHAUST CATALYST. MEDOWCRAFT ESTIMATED THAT THE COST OF THIS CATALYST WOULD BE ABOUT $1 PER POUND. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 726 249 13/2
IIT RESEARCH INST CHICAGO ILL

STUDY OF VISIBLE EXHAUST SMOKE FROM AIRCRAFT JET ENGINES. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JUN 71 68P STOCKHAM,JOHN ;BETZ,HOWARD ;
CONTRACT: DOT-FA69WA-2208
MONITOR: FAA-NA,FAA-RD 71-24,71-22

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*AIRCRAFT ENGINES, AIR POLLUTION), (*JET ENGINES, AIR POLLUTION), (*EXHAUST GASES, VISIBILITY), PARTICLES, PHOTOGRAPHY, MATHEMATICAL MODELS, LIGHT TRANSMISSION, SCATTERING, TURBOJET ENGINES (U)
IDENTIFIERS: LIGHT SCATTERING, *SMOKE NUMBER, SMOKE, *JET ENGINE EXHAUST (U)

THE OBJECTIVE OF THIS STUDY WAS TO RELATE THE VISIBILITY OF INFLIGHT JET EXHAUST TO THE SAE SMOKE NUMBER. A METHOD BASED ON PHOTOGRAPHIC PHOTOMETRY WAS DEVELOPED FOR MEASURING THE OPTICAL DENSITY OF SMOKE PLUMES. THIS METHOD WAS RELATED TO VISIBILITY AND TO THE SMOKE NUMBER THROUGH TRANSMISSOMETER MEASUREMENTS AND VISIBILITY THEORY. A PORTABLE TRANSMISSOMETER, CAPABLE OF OPERATING OVER A WIDE RANGE OF OPTICAL PATH LENGTHS AND UNDER VARYING AMBIENT LIGHT CONDITIONS WAS FABRICATED FOR USE ON THIS STUDY. THE MATHEMATICAL EXPRESSION RELATING THE TRANSMISSION MEASUREMENTS TO THE SMOKE NUMBER WAS DERIVED. LIMINAL VISIBILITY REQUIREMENTS OF SMOKE TRAILS, DEVELOPED FROM LIGHT SCATTERING THEORY, CORRELATED WITH ACTUAL VISUAL OBSERVATIONS AND THE TRANSMISSOMETER AND PHOTOMETRY MEASUREMENTS. TEST RESULTS, WITH THE ENGINES INVESTIGATED, INDICATE THAT SAE SMOKE NUMBERS BELOW 23 WERE ASSOCIATED WITH INVISIBLE EXHAUST PLUMES. SAMPLES OF THE EXHAUST SMOKE SHOWED THE PARTICLES TO BE COMPOSED OF LACY AGGLOMERATES. AT THE NOZZLE, THE GEOMETRIC MEDIAN PARTICLE DIAMETER WAS 0.052 MICROMETERS. AT A DISTANCE OF 10 NOZZLE DIAMETERS THE GEOMETRIC MEDIAN PARTICLE DIAMETER WAS 0.13 MICROMETER AT CRUISE CONDITION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 726 999 13/2 21/8.2 21/2
AIR FORCE ROCKET PROPULSION LAB EDWARDS AFB CALIF

ATMOSPHERIC DIFFUSION OF BERYLLIUM (PROJECT ADOBE). (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 APR 64-1 NOV 67,
JUL 71 116P TUCKER,GORDON L. ;MALONE,
HUGH E. ;SMITH,ROBERT W. ;
REPT. NO. AFRPL-TR-70-65-VOL-1
PROJ: AF-305999099, AF-305907024

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, BERYLLIUM), (*BERYLLIUM, DIFFUSION), (*ROCKET ENGINES, PROPELLANTS), EXHAUST GASES, CLOUDS, TRACKING, CHEMICAL ANALYSIS, TEST EQUIPMENT, TEST METHODS (U)
IDENTIFIERS: ADOBE(ATMOSPHERE DIFFUSION OF BERYLLIUM), ADOBE PROJECT, ATMOSPHERIC DENSITY, DIFFUSION (U)

A FIELD STUDY OF EXHAUST CLOUD DIFFUSION FROM SOLID ROCKET MOTORS WAS CONDUCTED AT THE AIR FORCE ROCKET PROPULSION LABORATORY. THE OBJECTIVE OF THE PROGRAM WAS TO CORRELATE THE DIFFUSION OF ROCKET MOTOR EXHAUST CLOUDS WITH MEASURABLE METEOROLOGICAL VARIABLES UNDER BOTH STABLE AND UNSTABLE ATMOSPHERIC CONDITIONS. FIFTY-SEVEN SETS OF FIELD DATA WERE COLLECTED FROM 250 TO 350 AIR SAMPLERS PER TEST USING SOLID ROCKET MOTORS RANGING FROM 100 TO 4000 POUNDS OF PROPELLANT CONTAINING BERYLLIUM. THE WORK IS PRESENTED IN THREE VOLUMES. VOLUME I DESCRIBES THE DIFFUSION EXPERIMENT, THE CHEMICAL ANALYSIS PROGRAM, THE BIOENVIRONMENTAL SAFETY PROGRAM, AND DISCUSSES THE DATA ANALYSIS AND THE RESULTING DIFFUSION EQUATIONS FROM HOT INSTANTANEOUS SOURCES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 727 022 6/20
SYSTEMED CORP DAYTON OHIO

PROCEEDINGS OF THE ANNUAL CONFERENCE ON ENVIRONMENTAL TOXICOLOGY (1ST) HELD AT FAIRBORN, OHIO, ON 9-11 SEPTEMBER 1970. (U)

DEC 70 389P
CONTRACT: F33615-70-C-1046
PROJ: AF-6302
MONITOR: AMRL TR-70-102

UNCLASSIFIED REPORT

DESCRIPTORS: (*CARBON MONOXIDE, TOXICITY), (*PROPELLANTS, TOXICITY), (*AIR POLLUTION, TOXICITY), (*TOXICITY, SYMPOSIA), METHYL HYDRAZINES, PATHOLOGY, EXPOSURE(PHYSIOLOGY), CHEMICALS, ELECTRON MICROSCOPY, GAS CHROMATOGRAPHY (U)

THE REPORT IS A COMPILATION OF THE PAPERS PRESENTED AND THE PROCEEDINGS OF THE 1ST ANNUAL CONFERENCE ON ENVIRONMENTAL TOXICOLOGY, SPONSORED BY THE SYSTEMED CORPORATION AND HELD IN FAIRBORN, OHIO ON 9, 10, AND 11 SEPTEMBER 1970. MAJOR TECHNICAL AREAS DISCUSSED INCLUDED TOXICOLOGICAL EVALUATION OF CARBON MONOXIDE, METHODOLOGY, PATHOLOGY, ATMOSPHERIC CONTAMINANTS, AND TOXICOLOGY OF PROPELLANTS AND OTHER MILITARY CHEMICALS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 727 745 21/2 21/7
CURTISS-WRIGHT CORP WOOD-RIDGE N J

EXPLORATORY DEVELOPMENT PROGRAM ON THE ROTATING COMBUSTION ENGINE USING THE RC1-90 TEST RIG. (U)

DESCRIPTIVE NOTE: SPECIAL REPT.,
JAN 71 15P JONES,C. ;LAMPING,H. ;
CORWIN,H. R. ;
REPT. NO. CW-WR-70-052.S
CONTRACT: N00019-70-C-0371

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPPLEMENT TO REPORT DATED NOV 70, AD-877 777.

DESCRIPTORS: (*EXHAUST GASES, EMISSIVITY), (*SPARK IGNITION ENGINES, EXHAUST GASES), THROTTLING, SPARK IGNITION, COMBUSTION, COMBUSTION PRODUCTS, AIR POLLUTION, CATALYSIS, TEST METHODS (U)
IDENTIFIERS: *ROTARY COMBUSTION ENGINES, JP-5 FUEL (U)

THE REPORT COVERS ADDITIONAL TESTING OF THE STRATIFIED CHARGE RC-90 ENGINE TO EXPLORE ITS EXHAUST EMISSION CHARACTERISTICS PLUS A BRIEF EVALUATION OF THE TEXACO IGNITION SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 732 195 6/3
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB OHIO

EXPOSURE OF MARIGOLD (TAGETES) TO GASEOUS HYDROGEN CHLORIDE. (U)

DESCRIPTIVE NOTE: FINAL REPT. 6 NOV 70-2 JUN 71,
SEP 71 18P LIND,CHRISTOPHER T. ;LONDON, SHELDON A. ;
REPT. NO. AMRL-TR-71-90
PROJ: AF-6302
TASK: 630204

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *CHLORIDES), (*PLANTS(BOTANY), AIR POLLUTION), EXHAUST GASES, SOLID ROCKET PROPELLANTS, EXPOSURE, TOXICITY (U)
IDENTIFIERS: *ROCKET EXHAUST, *HYDROGEN CHLORIDE (U)

THE ASCERTAIN THE EXTENT OF ENVIRONMENTAL POLLUTION PROBLEMS ATTENDANT WITH AIR FORCE MISSILE OPERATIONS, MATURE FLOWERING MARIGOLD PLANTS WERE EXPOSED TO ONE OF THE KNOWN EXHAUST PRODUCTS, HYDROGEN CHLORIDE. ALL PLANTS DIED AFTER 5 MIN EXPOSURE TO 2071 PPM THE HIGHEST CONCENTRATION USED. AT 95 PPM NO EFFECT WAS NOTED. SEEDS OBTAINED FROM THE EXPOSED PLANTS DID NOT APPEAR TO BE AFFECTED BY THE HCL TREATMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 733 111 13/2 1/5
BOEING SCIENTIFIC RESEARCH LABS SEATTLE WASH

ANALYSIS OF GROUND OPERATIONS AT AIRPORTS. (U)

DESCRIPTIVE NOTE: TECHNICAL PROPOSAL,
JAN 71 52P CAIRNS,R. BRYAN ;
REPT. NO. D1-82-1042

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIRPORTS, *AIR POLLUTION), CARBON MONOXIDE, HYDROCARBONS, NITROGEN OXIDES, METEOROLOGY, MATHEMATICAL MODELS, TAXIING, JET ENGINES, TAKE-OFF, AIRCRAFT LANDINGS, REFUELING (U)

THE POLLUTION SOURCE INVENTORY FOR AIRPORTS INCLUDE AIRPLANE OPERATIONS (CATEGORIZED ACCORDING TO TAXI, IDLE, TAKE-OFF, AND LANDING), AIRCRAFT SUPPORT VEHICLE OPERATIONS, VEHICULAR MOVEMENTS, STATIONARY POWER AND HEAT-SOURCE OPERATIONS, AND FUELING OPERATIONS. ALSO MEASUREMENTS ARE GIVEN OF CARBON MONOXIDE, HYDROCARBONS, PARTICULATES, OXIDES OF NITROGEN AND METEOROLOGICAL PARAMETERS. A MATHEMATICAL DISPERSION MODEL IS USED TO DERIVE CONTOUR MAPS OF INDIVIDUAL POLLUTANT CONCENTRATIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 733 505 13/2 15/5
ENVIRONMENTAL TECHNICAL APPLICATIONS CENTER (AIR FORCE)
WASHINGTON D C

DETERMINATION OF MAXIMUM EMISSION RATES TO MEET AIR QUALITY STANDARDS. (U)

DESCRIPTIVE NOTE: TECHNICAL NOTE,
AUG 71 22P GREENWAY,A. ROGER ;LYDON,
DAVID S. ;
REPT. NO. USAFETAC-TN-71-9

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *MILITARY FACILITIES), (*ATMOSPHERIC MOTION, AIR POLLUTION), COMBUSTION PRODUCTS, DIFFUSION, AIR FORCE OPERATIONS, WIND, STANDARDS (U)
IDENTIFIERS: MILITARY AIR FACILITIES, AIR POLLUTION STANDARDS, ATMOSPHERIC DIFFUSION, *FLUE GASES, TINKER AIR FORCE BASE (U)

THE REPORT EXPLAINS BRIEFLY THE TECHNIQUE USED TO CALCULATE FOR CERTAIN AIR FORCE BASES ALLOWABLE STACK EMISSIONS WITHIN THE LIMITS OF THE ENVIRONMENTAL PROTECTION AGENCY'S AIR QUALITY STANDARDS. EXAMPLES OF SUCH CALCULATIONS FOR CAPE KENNEDY AFS, KELLY AFB, AND TINKER AFB ARE GIVEN. GRAPHS OF 'EMISSION RATE VS DOWNWIND DISTANCES' ARE FURNISHED WHICH ALLOW DOWNWIND GROUND-CONCENTRATIONS OF SPECIFIC POLLUTANTS TO BE READILY ESTIMATED FOR EFFECTIVE STACK HEIGHTS OF 30, 50, AND 70 FEET. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 735 338 21/4
ARMY COATING AND CHEMICAL LAB ABERDEEN PROVING GROUND MD

AUTOMOTIVE FUEL CONDITIONERS: THEIR PROPERTIES AND EFFECTIVENESS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 71 26P LEPERA,MAURICE E. ;
SONNENBURG,JOHN G. ;
REPT. NO. CCL-299
PROJ: DA-1-T-062105-A-106

UNCLASSIFIED REPORT

DESCRIPTORS: (*PASSENGER VEHICLES, FUEL ADDITIVES), (*GASOLINE, *FUEL ADDITIVES), TEST METHODS, SPARK IGNITION ENGINES, EFFECTIVENESS, PHYSICAL PROPERTIES, AIR POLLUTION (U)
IDENTIFIERS: AUTOMOBILES (U)

FUEL CONDITIONERS ARE MADE AVAILABLE TO CONSUMER OUTLETS THROUGH SERVICE STATIONS, DISCOUNT STORES, AND AUTOMOTIVE SUPPLY HOUSES, AND ARE DESIGNED TO BE ADDED TO VEHICLE FUEL TANKS AS A 'SUPPLEMENT' TO FINISHED GASOLINES. THESE CONDITIONERS HAVE BEEN ADVERTISED TO IMPROVE THE OVERALL PERFORMANCE OF INTERNAL-COMBUSTION ENGINES IN A VARIETY OF WAYS WITH THE END RESULT THAT ENGINE EMISSIONS ARE REPORTED TO BE REDUCED. PHYSIOCHEMICAL DATA WAS DEVELOPED ON THE NINETEEN GASOLINE AND DIESEL FUEL CONDITIONERS TO ASSIST IN UNDERSTANDING THE MECHANISM OF THEIR ACTIVITY. THEIR EFFECTIVENESS WAS DETERMINED BY LABORATORY BENCH-SCALE TESTS USING A SPECIALLY DESIGNED APPARATUS WHICH SIMULATED AUTOMOTIVE INDUCTION SYSTEM ENVIRONMENTS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 735 943 13/2
DEPARTMENT OF TRANSPORTATION WASHINGTON D C LIBRARY SERVICES DIV

AIRCRAFT AND AIR POLLUTION. SELECTED READINGS. (U)

DESCRIPTIVE NOTE: REPT. FOR 1960-1971,
DEC 71 66P POEHLMAN,DOROTHY J. ;
REPT. NO. BIBLIOGRAPHIC LIST-7

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, AIRCRAFT ENGINES), (*AIRCRAFT ENGINES, *EXHAUST GASES), BIBLIOGRAPHIES, AVIATION FUELS, DISPOSAL, SUPERSONIC AIRCRAFT, CLIMATE, PARTICLES, AIRPORTS, ECOLOGY, GAS TURBINES, FUEL ADDITIVES, MONITORS (U)
IDENTIFIERS: AIR POLLUTION DETECTION, AIR POLLUTION CONTROL, AIR POLLUTION CONTROL EQUIPMENT, *AIRCRAFT EXHAUST, GOVERNMENT POLICIES (U)

PRESENTED IS A SELECTED, PARTIALLY ANNOTATED LISTING OF PAPERS, REPORTS, AND PERIODICAL ARTICLES, ON THE SUBJECT OF ENVIRONMENTAL POLLUTION CAUSED BY AIRCRAFT EMISSIONS. NOISE POLLUTION IS NOT INCLUDED. THE PERIOD COVERED IS FROM APPROXIMATELY 1960 - SPRING 1971. THE ARRANGEMENT IS BY SUBJECT CATEGORIES WITH AUTHOR, CORPORATE SOURCE AND GEOGRAPHIC INDEXES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 738 141 21/2 13/2
ARMY COATING AND CHEMICAL LAB ABERDEEN PROVING GROUND MD

STUDYING THE FLAME RADIATION CHARACTERISTICS OF DIESEL FUELS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JAN 72 29P LEPERA,MAURICE E. ;HARTZELL, LYNDON G. ;
REPT. NO. CCL-301
PROJ: DA-1-T-062105-A-106

UNCLASSIFIED REPORT

DESCRIPTORS: (*FUEL OIL, COMBUSTION), (*SMOKE, REDUCTION), (*AIR POLLUTION, EXHAUST GASES), TEST EQUIPMENT, DIESEL ENGINES, FLAMES (U)
IDENTIFIERS: *SMOKE SUPPRESSANT ADDITIVES (U)

THE ASTM D-1740 LUMINOMETER APPARATUS WAS EVALUATED AS A TECHNIQUE FOR RATING THE COMBUSTION IMPROVING PROPERTIES OF DIESEL SMOKE SUPPRESSANT ADDITIVES. PRELIMINARY EXPERIMENTATION, WHICH REVEALED THE INADEQUACIES OF THIS APPROACH RESULTING FROM POOR TEST REPEATABILITY, LED TO THE DEVELOPMENT OF A NEW WICK PREPARED FROM GLASS-WOOL FIBERS. FURTHER TESTING WAS CONDUCTED TO OPTIMIZE THE CHARACTERISTICS OF THE EXPERIMENTAL GLASS FIBER WICK WHICH WAS SUBSEQUENTLY RECOMMENDED FOR RATING THE FLAME RADIATION PROPERTIES OF DIESEL FUELS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 738 799 13/2
NAVAL RESEARCH LAB WASHINGTON D C

A SURVEY OF AUTOMOTIVE EMISSIONS. (U)

DESCRIPTIVE NOTE: INTERIM REPT.,
OCT 71 42P LOCKHART,LUTHER B. ;ALI,
ABDUL W. ;MANGE,PHILLIP W. ;
REPT. NO. NRL-MR-2346
PROJ: NRL-K03-50

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*EXHAUST GASES, *PASSENGER VEHICLES), CARBON MONOXIDE, LEAD(METAL), REVIEWS, ATMOSPHERIC MOTION, PUBLIC HEALTH, PLANTS(BOTANY), HYDROCARBONS, NITROGEN OXIDES, PHOTOCHEMICAL REACTIONS, PARTICLES, ASBESTOS, TIRES (U)
IDENTIFIERS: AIR POLLUTION EFFECTS(PLANTS), AIR POLLUTION EFFECTS(ANIMALS), *AUTOMOBILE EXHAUST, AUTOMOBILE ENGINES, SMOG (U)

A SURVEY HAS BEEN MADE OF THE GENERATION, DISPERSAL AND REMOVAL PROCESSES FOR THE VARIOUS AUTOMOTIVE EMISSIONS AND THEIR NATURAL COUNTERPARTS IN THE ATMOSPHERE, AND OF THEIR EFFECTS ON MAN AND HIS ENVIRONMENT. IN ONLY A FEW CATEGORIES (I.E., CO, PB) ARE AUTOMOTIVE EMISSIONS OF SIGNIFICANCE RELATIVE TO OTHER ANTHROPOGENIC OR NATURAL SOURCES OF POLLUTANTS IN THE ATMOSPHERE AS A WHOLE; HOWEVER, LOCALIZED EFFECTS CAN BE OVERRIDING AS A RESULT OF PECULIAR GEOGRAPHICAL OR METEOROLOGICAL FACTORS. UNDER CERTAIN CONDITIONS OF POPULATION DENSITY, AUTOMOBILE USAGE AND WEATHER, PHOTOCHEMICALLY MODIFIED AUTOMOTIVE EFFLUENTS HAVE APPROACHED THE THRESHOLD TOXICITY LIMITS FOR SUSCEPTIBLE INDIVIDUALS AND PLANTS. THERE ARE APPARENTLY NO SIGNIFICANT LONG-TERM ATMOSPHERIC CHANGES THAT MAN MIGHT PRODUCE WHICH CANNOT BE RAPIDLY REVERSED AT ANY TIME BY MAN'S CURTAILMENT OF HIS OWN ACTIVITIES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 738 801 13/2 14/2 13/6
NAVAL RESEARCH LAB WASHINGTON D C

LARGE-SCALE MONITORING OF AUTOMOBILE EXHAUST PARTICULATES; METHODS AND COSTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN-AUG 71,
OCT 71 26P BIRKS,L. S. ;GILFRICH,J. V. ;NAGEL,D. J. ;
REPT. NO. NRL-MR-2350
PROJ: NRL-K03-50

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*EXHAUST GASES, *PASSENGER VEHICLES), MEASUREMENT, PARTICLE SIZE, CHEMICAL ANALYSIS, MONITORS, COSTS, ATOMIC SPECTROSCOPY, X RAY SPECTROSCOPY, SAMPLING, PARTICLES (U)
IDENTIFIERS: FLUORESCENCE, X RAYS, *MOTOR VEHICLE INSPECTION, *AIR POLLUTION DETECTION, *AUTOMOBILE EXHAUST, IMPACTORS (U)

THE HYPOTHETICAL PROBLEM ADDRESSED IS ANNUAL MONITORING OF 150 MILLION CARS FOR EXHAUST PARTICLATES. FOUR TOPICS ARE REVIEWED CONCERNING THE PARTICULATES: TOTAL MASS EXPRESSED IN GRAMS PER MILE; PARTICLE SIZE DISTRIBUTION; ELEMENTAL ANALYSIS; STATE OF CHEMICAL COMBINATION. AT PRESENT THE ONLY SPECIFICATION IS IN GRAMS PER MILE BUT CONSIDERATION IS BEING GIVEN TO PARTICLE SIZE AND TO ELEMENTAL ANALYSIS OF KNOWN HARMFUL CONSTITUENTS. SINCE MANUFACTURERS WILL NOT BE TOLD HOW TO MEET THE SPECIFICATIONS, A WIDE VARIETY OF EMISSION CONTROL SYSTEMS MAY BE EXPECTED AND ALONG WITH THEM A WIDE VARIETY OF PARTICULATE COMPOSITIONS.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 739 176 21/2 21/5
TENNESSEE UNIV SPACE INST TULLAHOMA

POLLUTANT PRODUCTION IN A SIMULATED TURBOJET AFTERBURNER. PART I. EXPERIMENTAL AND THEORETICAL STUDY. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 NOV 70-31 JUL 71, FEB 72 139P CRAWFORD,LLOYD W. ;MASON, ARTHUR A. ;LENTS,JAMES M. ;
CONTRACT: F33615-71-C-1125
PROJ: AF-3066
TASK: 306605
MONITOR: AFAPL TR-71-66-PT-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO PART 2, AD-739 177.

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*AFTERBURNERS, *EXHAUST GASES), (*TURBOJET ENGINES, EXHAUST GASES), CARBON MONOXIDE, HYDROCARBONS, NITROGEN OXIDES, AIRCRAFT ENGINES, TEST METHODS, REACTION KINETICS, MATHEMATICAL MODELS, INFRARED SPECTROSCOPY, COMPUTER PROGRAMS, CONCENTRATION(CHEMISTRY) (U)
IDENTIFIERS: *AIRCRAFT EXHAUST (U)

AN EXPERIMENTAL AND THEORETICAL STUDY HAS BEEN MADE OF THE HISTORY OF THE POLLUTANTS CARBON MONOXIDE (CO), UNBURNED HYDROCARBONS (HC) AND NITROGEN OXIDES (NO(X)) IN A TURBOJET AFTERBURNER. EXPERIMENTAL TRAVERSES AT SEVERAL AXIAL STATIONS WERE PERFORMED IN A SIMULATED AFTERBURNER IN WHICH EXHAUST FROM A J-47 COMBUSTOR CAN, OPERATED AT MEDIUM POWER, WAS MIXED WITH FUEL SPRAY. EXPERIMENTS WERE CARRIED OUT BOTH IN A NON-BYPASS AND IN A BYPASS CONFIGURATION (SECONDARY AIR WAS MIXED WITH PRIMARY EXHAUST). THE THEORETICAL ANALYSIS CONSISTED OF A COMPUTER PROGRAM FOR REACTING FLOW WITH TURBULENT MIXING. INFRARED MEASUREMENTS OF NO IN THE COMBUSTION TUNNEL WERE ATTEMPTED. INDICATIONS WERE OBTAINED OF NO AT THE 5.3 MICRON BAND, BUT QUANTITATIVE MEASUREMENTS WERE NOT OBTAINED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 739 177 21/2 21/5
TENNESSEE UNIV SPACE INST TULLAHOMA

POLLUTANT PRODUCTION IN A SIMULATED TURBOJET AFTERBURNER. PART II. COMPUTER PROGRAM FOR CALCULATION OF POLLUTANT HISTORY IN AFTERBURNING TURBOJET ENGINES. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 NOV 70-31 JUL 71,
FEB 72 71P CRAWFORD,LLOYD W. ;MASON,
ARTHUR A. ;LENTS,JAMES M. ;
CONTRACT: F33615-71-C-1125
PROJ: AF-3066
TASK: 306605
MONITOR: AFAPL TR-71-66-PT-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO PART 1, AD-739 176.

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*AFTERBURNERS, EXHAUST GASES), (*TURBOJET ENGINES, EXHAUST GASES), (*COMBUSTION PRODUCTS, COMPUTER PROGRAMS), HANDBOOKS, CONCENTRATION(CHEMISTRY), REACTION KINETICS, NITROGEN OXIDES, HYDROCARBONS, CARBON MONOX(U)
IDENTIFIERS: *AIRCRAFT EXHAUST (U)

THE USERS MANUAL WAS PREPARED TO PROVIDE THE MEANS OF ESTIMATING AIR POLLUTION CONCENTRATIONS IN THE EXHAUST GASES FROM AFTERBURNING TURBOJET ENGINES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 739 777 13/2 14/2
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT
PARIS (FRANCE)

ATMOSPHERIC POLLUTION BY AIRCRAFT ENGINES AND FUELS--A SURVEY. (U)

DESCRIPTIVE NOTE: ADVISORY REPT.,
MAR 72 40P SAWYER,ROBERT F. ;
REPT. NO. AGARD-AR-40

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO FURNISHED.

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*EXHAUST GASES, *AIRCRAFT ENGINES), (*SCIENTIFIC RESEARCH, AIR POLLUTION), JET ENGINES, TEST METHODS, NITROGEN OXIDES, CARBON MONOXIDE, HYDROCARBONS, UPPER ATMOSPHERE (U)
IDENTIFIERS: NITROGEN OXIDE(NO), AIRCRAFT EXHAUST, RESEARCH MANAGEMENT (U)

A SURVEY OF ATMOSPHERIC POLLUTION BY AIRCRAFT ENGINES AND FUELS AND RELATED RESEARCH WORK WAS CONDUCTED. APPROXIMATELY 45 ORGANIZATIONS IN THE UNITED STATES, UNITED KINGDOM, FRANCE, THE NETHERLANDS, BELGIUM, GERMANY, AND ITALY WERE CONTACTED AND OVER 100 RELEVANT PROGRAMS IDENTIFIED. A LIST OF THE ORGANIZATIONS IS GIVEN. AIRCRAFT PRODUCE A SMALL BUT SIGNIFICANT AND INCREASING CONTRIBUTION TO AIR POLLUTION. TWENTY-SEVEN CURRENT OR POTENTIAL PROBLEM AREAS FOR INVESTIGATION ARE DESCRIBED AND RELATED WORK OUTLINED. OF THESE AREAS, THE FIVE MOST PRESSING ARE: ENGINE EMISSION CHARACTERISTICS; TEST PROCEDURES; NITRIC OXIDE FORMATION; CARBON MONOXIDE AND HYDROCARBONS AT LOW POWER; EFFECT OF HIGH ALTITUDE EMISSIONS. RECOMMENDATIONS ARE PRESENTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 741 249 21/2 21/5
NAVAL AIR PROPULSION TEST CENTER TRENTON N J AERONAUTICAL TURBINE DEPT

STUDY OF ALTITUDE AND MACH NUMBER EFFECTS ON EXHAUST GAS EMISSIONS OF AN AFTERBURNING TURBOFAN ENGINE. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 71 27P PALCZA,J. LAWRENCE ;
REPT. NO. NAPTC-ATD-212
MONITOR: FAA-RD 72-31

UNCLASSIFIED REPORT

DESCRIPTORS: (*AFTERBURNERS, EXHAUST GASES), (*TURBOFAN ENGINES, AFTERBURNERS), MACH NUMBER, AIR POLLUTION, COMBUSTION PRODUCTS, SAMPLING, CORRELATION TECHNIQUES, TEST METHODS, TRANSONIC CHARACTERISTICS (U)
IDENTIFIERS: TF-30 ENGINES (U)

A TF30-P-412 AUGMENTED TURBOFAN ENGINE WAS TESTED AT SIMULATED ALTITUDES AND MACH NUMBERS TO DETERMINE THE EFFECTS OF THESE PARAMETERS (ALTITUDE AND MACH NUMBER) ON EXHAUST POLLUTION EMISSIONS. EMISSION MEASUREMENTS WERE MADE OVER A RANGE OF ENGINE POWER SETTINGS FROM IDLE TO FULL AUGMENTATION AT ALTITUDES FROM SEA LEVEL TO 70,000 FEET AND A MACH NUMBER RANGE OF 0 TO 1.8. THERE WAS NO APPARENT EFFECT ON EMISSION LEVELS DUE TO ALTITUDE OR MACH NUMBER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 741 505 21/2 21/5 13/2
NORTHERN RESEARCH AND ENGINEERING CORP CAMBRIDGE MASS

THE CONTROL OF OXIDES OF NITROGEN EMISSIONS FROM AIRCRAFT GAS TURBINE ENGINES. VOLUME 1. PROGRAM DESCRIPTION AND RESULTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 70-DEC 71,
DEC 71 110P FLETCHER,RONALD S. ;SIEGEL,
RICHARD D. ;BASTRESS,E. KARL ;
REPT. NO. NREC-1162-1
CONTRACT: DOT-FA70WA-2428
MONITOR: FAA-RD 71-111-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-741 506.

DESCRIPTORS: (*AIRCRAFT ENGINES, EXHAUST GASES), (*AIR POLLUTION, EXHAUST GASES), (*GAS TURBINES, *EXHAUST GASES), (*NITROGEN OXIDES, *COMBUSTION), (*COMBUSTION CHAMBERS, GAS TURBINES), GAS FLOW, MATHEMATICAL MODELS, MIXTURES, REACTION KINETICS, DESIGN, COMBUSTION CHAMBER LINERS (U)
IDENTIFIERS: MIXING, NITROGEN OXIDE(NO), *AIR POLLUTION, *CONTROL, *AIRCRAFT EXHAUST (U)

THE OBJECTIVE OF THE STUDY WAS TO DEVELOP CRITERIA FOR USE IN THE DESIGN OF AIRCRAFT GAS TURBINE COMUSTION CHAMBERS TO MINIMIZE NITROGEN OXIDE EMISSIONS. THE APPROACH ADOPTED INVOLVED THE DEVELOPMENT OF A MATHEMATICAL MODEL OF NOX EMISSION FROM AIRCRAFT ENGINE COMBUSTORS; A PARAMETRIC ANALYSIS, USING THE MODEL, TO DETERMINE THE SENSITIVITY OF NOX EMISSIONS TO VARIATIONS OF MODEL PARAMETERS AND ENGINE DESIGN VARIABLES; EVALUATION OF CRITICAL MODEL PARAMETERS BY MEANS OF EXPERIMENTAL MEASUREMENTS; AND THE INCORPORATION OF THE MODEL INTO COMBUSTOR DESIGN METHODS TO PROVIDE GUIDELINES FOR MINIMIZING NOX EMISSION WHILE MAINTAINING OTHER PERFORMANCE AND EMISSION CHARACTERISTICS. THE RESULTS OF THE STUDY AND THE NOX EMISSION CONTROL CRITERIA ARE DESCRIBED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 741 506 21/2 21/5 13/2
NORTHERN RESEARCH AND ENGINEERING CORP CAMBRIDGE MASS

THE CONTROL OF OXIDES OF NITROGEN EMISSIONS FROM AIRCRAFT GAS TURBINE ENGINES. VOLUME 2. THE NOX FORMATION PROCESS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 70-DEC 71, DEC 71 144P FLETCHER,RONALD S. ;SIEGEL, RICHARD D. ;
REPT. NO. NREC-1162-2
CONTRACT: DOT-FA70WA-2428
MONITOR: FAA-RD 71-111-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-741 505 AND VOLUME 3, AD-741 570.

DESCRIPTORS: (*AIRCRAFT ENGINES, EXHAUST GASES), (*AIR POLLUTION, EXHAUST GASES), (*GAS TURBINE REGENERATORS, *EXHAUST GASES), (*NITROGEN OXIDES, *COMBUSTION), REACTION KINETICS, COMPUTER PROGRAMS, THERMODYNAMICS (U)
IDENTIFIERS: NITROGEN OXIDE(NO), *AIR POLLUTION, *CONTROL, *AIRCRAFT EXHAUST (U)

THE OBJECTIVE OF THE STUDY WAS TO DEVELOP CRITERIA FOR USE IN THE DESIGN OF AIRCRAFT GAS TURBINE COMBUSTION CHAMBERS TO MINIMIZE NITROGEN OXIDE EMISSIONS. THE APPROACH ADOPTED INVOLVED THE DEVELOPMENT OF A MATHEMATICAL MODEL OF NOX EMISSION FROM AIRCRAFT ENGINE COMBUSTORS; A PARAMETRIC ANALYSIS, USING THE MODEL, TO DETERMINE THE SENSITIVITY OF NOX EMISSIONS TO VARIATIONS OF MODEL PARAMETERS AND ENGINE DESIGN VARIABLES; EVALUATION OF CRITICAL MODEL PARAMETERS BY MEANS OF EXPERIMENTAL MEASUREMENTS; AND THE INCORPORATION OF THE MODEL INTO COMBUSTOR DESIGN METHODS TO PROVIDE GUIDELINES FOR MINIMIZING NOX EMISSION WHILE MAINTAINING OTHER PERFORMANCE AND EMISSION CHARACTERISTICS. THE REPORT DESCRIBES THE NITRIC OXIDE FORMATION PROCESS AND A COMPUTER PROGRAM (NOXRAT) FOR CALCULATING THERMODYNAMIC DATA. THE PROGRAM IS BASED UPON A SIX-REACTION MODEL OF NO FORMATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 741 570 21/2 21/5 13/2
NORTHERN RESEARCH AND ENGINEERING CORP CAMBRIDGE MASS

THE CONTROL OF OXIDES OF NITROGEN EMISSIONS FROM AIRCRAFT GAS TURBINE ENGINES. VOLUME 3. THE FLOW MODEL. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 70-DEC 71,
DEC 71 173P FLETCHER,RONALD S. ;SIEGEL, RICHARD D. ;
REPT. NO. NREC-1162-3
CONTRACT: DOT-FA70WA-2428
MONITOR: FAA-RD 71-111-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-741 506.

DESCRIPTORS: (*AIRCRAFT ENGINES, EXHAUST GASES), (*AIR POLLUTION, EXHAUST GASES), (*GAS TURBINES, *EXHAUST GASES), (*NITROGEN OXIDES, *COMBUSTION), REACTION KINETICS, COMBUSTION CHAMBERS, DESIGN, GAS FLOW, COMPUTER PROGRAMS, MATHEMATICAL MODELS (U)
IDENTIFIERS: NITROGEN OXIDE(NO), *AIR POLLUTION, *CONTROL, *AIRCRAFT EXHAUST (U)

THE OBJECTIVE OF THE STUDY WAS TO DEVELOP CRITERIA FOR USE IN THE DESIGN OF AIRCRAFT GAS TURBINE COMBUSTION CHAMBERS TO MINIMIZE NITROGEN OXIDE EMISSIONS. THE APPROACH ADOPTED INVOLVED THE DEVELOPMENT OF A MATHEMATICAL MODEL OF NOX EMISSION FROM AIRCRAFT ENGINE COMBUSTORS; A PARAMETRIC ANALYSIS, USING THE MODEL, TO DETERMINE THE SENSITIVITY OF NOX EMISSIONS TO VARIATIONS OF MODEL PARAMETERS AND ENGINE DESIGN VARIABLES; EVALUATION OF CRITICAL MODEL PARAMETERS BY MEANS OF EXPERIMENTAL MEASUREMENTS; AND THE INCORPORATION OF THE MODEL INTO COMBUSTOR DESIGN METHODS TO PROVIDE GUIDELINES FOR MINIMIZING NOX EMISSION WHILE MAINTAINING OTHER PERFORMANCE AND EMISSION CHARACTERISTICS. THE REPORT DESCRIBES COMBUSTION AND FLOW PROCESSES IN GAS TURBINE COMBUSTORS AND A COMPUTER PROGRAM (GASNOX) FOR CALCULATING GAS PROPERTIES AND NO CONCENTRATIONS THROUGHOUT A COMBUSTOR. THIS PROGRAM IS BASED UPON A THREE-ZONE, HETEROGENEOUS MODEL OF GAS TURBINE COMBUSTOR OPERATION. PROGRAM GASNOX IS USED WITH INPUT DATA FROM PROGRAM NOXRAT TO CALCULATE NO EMISSION RATES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 742 624 13/2 20/5
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

THE USE OF LASERS IN POLLUTION MONITORING. (U)

DESCRIPTIVE NOTE: JOURNAL ARTICLE,
NOV 71 12P MELNGAILIS,IVARS ;
REPT. NO. JA-3984
CONTRACT: F19628-70-C-0230
MONITOR: ESD TR-72-100

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN IEEE TRANSACTIONS ON GEOSCIENCE ELECTRONICS, VGE-10 N1 P7-17 JAN 72.
SUPPLEMENTARY NOTE: PRESENTED AT THE IEEE GEOSCIENCE ELECTRONICS SYMPOSIUM, HELD AT WASHINGTON, D.C., ON 25-27 AUG 71. REVISION OF REPORT DATED 20 SEP 71.

DESCRIPTORS: (*AIR POLLUTION, GAS DETECTORS), (*GAS DETECTORS, *LASERS), REVIEWS, RAMAN SPECTROSCOPY, ABSORPTION SPECTRA, FLUORESCENCE, RESONANCE ABSORPTION, DEMODULATION, SULFUR COMPOUNDS, CARBON MONOXIDE (U)
IDENTIFIERS: LASER SPECTROSCOPY, LIGHT SCATTERING, ORGANIC DYE LASERS, *AIR POLLUTION DETECTION, REMOTE SENSING, RESONANCE FLUORESCENCE, SEMICONDUCTOR LASERS, SULFUR DIOXIDE, TUNABLE LASER, JOINT PANEL AMMUNITION DISPOSAL, JPAD(JOINT PANEL AMMUNITION DISPOSAL) (U)

OPTICAL TECHNIQUES HAVE OPENED UP NEW POSSIBILITIES IN AIR POLLUTION MONITORING BECAUSE OF THEIR REMOTE-SENSING CAPABILITITY, VERY HIGH SPECIFICITY, AND SHORT OBSERVATION TIME. TECHNIQUES INVOLVING THE USE OF LASERS INCLUDE RAMAN SCATTERING, EMISSION EITHER FROM RESONANTLY EXCITED OR FROM HOT GASES, AND RESONANT ABSORPTION AND ARE DISCUSSED. UNIQUE ADVANTAGES IN THESE APPLICATIONS ARE PROVIDED BY THE RECENTLY DEVELOPED TUNABLE LASERS, INCLUDING ORGANIC DYE LASERS, PARAMETRIC OSCILLATORS, SPIN-FLIP RAMAN LASERS, AND SEMICONDUCTOR LASERS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 744 048 13/2 21/5
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

MEASUREMENT OF POLLUTANT EMISSIONS FROM AN AFTERBURNING TURBOJET ENGINE AT GROUND LEVEL. PART I. PARTICULATE EMISSIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 23 MAR-13 MAY 71, JUN 72 56P GEARHART,J. W. ;BENEK,J. A. ;
REPT. NO. AEDC-TR-72-64
CONTRACT: F40600-72-C-0003
PROJ: AF-3066, ARO-RW-5139

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO, INC., TULLAHOMA, TENN., REPT. NO. ARO-ETF-TR-72-29.

DESCRIPTORS: (*TURBOJET ENGINES, EXHAUST GASES), (*EXHAUST GASES, *AFTERBURNERS), (*AIR POLLUTION, EXHAUST GASES), PARTICLES, AIRCRAFT ENGINES, TURBOJET ENGINES, MEASUREMENT, GAS ANALYSIS (U)
IDENTIFIERS: *AIRCRAFT EXHAUST, SMOKE NUMBER, J-85-GE-5 ENGINES, J-85 ENGINES (U)

SMOKE EMISSIONS WERE MEASURED IN GENERAL ACCORDANCE WITH THE METHODS SPECIFIED IN THE SOCIETY OF AUTOMOTIVE ENGINEERS AEROSPACE RECOMMENDED PRACTICE 1179. MEASUREMENTS WERE MADE FROM 1 IN. TO 32 FT AFT OF THE NOZZLE EXIT ALONG THE ENGINE CENTERLINE, AND BOTH HORIZONTALLY AND VERTICALLY ACROSS THE EXHAUST PLUME. THE J85-GE-5 TURBOJET ENGINE WAS OPERATED OVER A POWER RANGE FROM IDLE TO MAXIMUM AFTERBURNING. THE EFFECTS OF INLET TEMPERATURE AND HUMIDITY ON SMOKE PRODUCTION WERE DETERMINED, AND TRENDS OF SMOKE PRODUCTION VERSUS POWER SETTING WERE ESTABLISHED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 744 121 13/2
TECHNOLOGY SERVICE CORP SANTA MONICA CALIF

MULTI-OBJECTIVE EVALUATION OF A TRAFFIC RESTRICTION POLICY FOR AIR POLLUTION EPISODE CONTROL. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
NOV 71 57P COLLINS,D. C. ;MEISEL,W. S. ;TEENER,M. D. ;
REPT. NO. TSC-030
CONTRACT: F44620-71-C-0093
PROJ: AF-9749
MONITOR: AFOSR TR-72-1218

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *TRANSPORTATION), OPTIMIZATION, LAW, COSTS, MATHEMATICAL MODELS, EXHAUST GASES (U)
IDENTIFIERS: *ABATEMENT, *AIR POLLUTION, BENEFIT COST ANALYSIS, HIGHWAY TRANSPORTATION, STRATEGY, *VEHICULAR TRAFFIC CONTROL (U)

THE OBJECTIVE OF THE WORK IS TWOFOLD: THE TESTING IN A PRACTICAL CONTEXT OF TECHNIQUES FOR OPTIMIZING A COMPLEX SYSTEM WITH RESPECT TO MULTIPLE CRITERIA; AND EVALUATION OF A STRATEGY FOR REDUCING AIR POLLUTION THROUGH CONTROLS ON FREEWAY TRAFFIC. THE CONTROL STRATEGY ENCOURAGES MULTIPLE RIDERS BY PENALIZING ONE-PERSON VEHICLES DURING CERTAIN PEAK TRAFFIC HOURS. THE LENGTH OF THE PENALTY PERIOD IS A FUNCTION OF THE POLLUTANT LEVEL THE PREVIOUS DAY; IT IS THIS FUNCTION WHICH IS TO BE SPECIFIED. THE COST FUNCTIONS ARE THE AVERAGE LEVEL OF POLLUTANTS OVER A ONE-WEEK PERIOD, AND THE TOTAL NUMBER OF PENALTY HOURS DURING THE WEEK (THE INCONVENIENCE AND ENFORCEMENT COST). (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 745 877 14/2 21/5
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

PRODUCTION TEST FACILITIES FOR TURBOJET AND TURBOFAN ENGINES - 1975 TO 1995. (U)

MAY 72 83P BAILEY,DAVID L. ;TOWER, PHILIP W. ;
REPT. NO. NPS-57BA72061A

UNCLASSIFIED REPORT

DESCRIPTORS: (*TURBOJET ENGINES, *TEST FACILITIES), TURBOFAN ENGINES, TEST EQUIPMENT, DESIGN, THRUST, JET ENGINE INLETS, JET ENGINE NOISE, EXHAUST SYSTEMS, AERODYNAMIC CHARACTERISTICS, INSTRUMENTATION, CONTROL SYSTEMS, AIR POLLUTION, DATA PROCESSING (U)

A REVIEW IS MADE OF TEST CELL DESIGN OPTIONS IN ORDER TO IDENTIFY CHARACTERISTICS OF JET ENGINE TEST FACILITIES TO BE CONSTRUCTED IN THE 1970'S AND DESIGNED TO BE OPERABLE FOR A MINIMUM OF TWENTY YEARS. THE NECESSITY OF PROVIDING REPLACEMENTS FOR MANY CURRENT FACILITIES IS DOCUMENTED, AND THE FACTORS WHICH WILL ENSURE FUTURE PRODUCTION CAPABILITY AND ECONOMIC FEASIBILITY ARE DETAILED. PRESENT TURBINE ENGINES ARE REVIEWED AND PROJECTIONS OF FUTURE ENGINES AND AIRCRAFT ARE MADE. A CONFIDENTIAL SUPPLEMENT IS AVAILABLE FOR QUALIFIED RECIPIENTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 746 280 13/2 17/8 17/5
TORONTO UNIV (ONTARIO) INST FOR AEROSPACE STUDIES

A COMPARATIVE STUDY OF LASER METHODS OF AIR POLLUTION MAPPING, (U)

DEC 71 44P MEASURES,R. M. ;
REPT. NO. UTIAS-174

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *OPTICAL RADAR), (*GAS DETECTORS, OPTICAL RADAR), (*NITROGEN OXIDES, GAS DETECTORS), GAS LASERS, SCATTERING, FLUORESCENCE, EXCITATION, BACKSCATTERING, RAMAN SPECTROSCOPY, MAPPING, ABSORPTION, MONITORS, RELAXATION TIME, CONCENTRATION(CHEMISTRY), MATHEMATICAL ANALYSIS, CANADA (U)
IDENTIFIERS: LASER INDUCED FLUORESCENCE, NITROGEN OXIDE(NO2), OPTICAL RADAR, *AIR POLLUTION DETECTION, PLUMES, LIGHT SCATTERING, RAMAN SPECTRA, TRACE ELEMENTS (U)

A COMPARATIVE STUDY HAS BEEN MADE OF THREE LASER METHODS OF REMOTELY MAPPING GASEOUS POLLUTANTS OF THE ATMOSPHERE. IT HAS BEEN FOUND THAT, IN THE CASE OF NO2 AND SO2, DIFFERENTIAL ABSORPTION AND SCATTERING HAS SUPERIOR PERFORMANCE POTENTIAL WITH REGARD TO RANGE AND SENSITIVITY THAN EITHER LASER-INDUCED FLUORESCENCE OR RAMAN BACKSCATTERING. HOWEVER, BECAUSE OF THE SOPHISTICATION OF THIS SYSTEM AND THE DIFFICULTY OF INTERPRETATION, IT IS STRONGLY RECOMMENDED THAT FROM THE LONG TERM POINT OF VIEW THE FLUORESCENCE APPROACH BE PURSUED FURTHER AS IT HAS A RANGE AND SENSITIVITY FAR SUPERIOR TO RAMAN BACKSCATTERING FOR A GIVEN LASER POWER. AN ANALYSIS OF THE FLUORESCENCE RETURN EXPECTED FROM A LOCAL SOURCE OF NO2 INDICATES THAT A PLUME OF ABOUT 10 PPM COULD BE DETECTED AT A RANGE OF SEVERAL KILOMETERS. HOWEVER, DUE TO ABSORPTION EFFECTS, CARE MUST BE USED IN THE INTERPRETATION OF SIGNALS EMANATING FROM LOCAL CONCENTRATIONS IN EXCESS OF ABOUT 10 PPM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 746 660 6/20
SYSTEMED CORP DAYTON OHIO

PROCEEDINGS OF THE ANNUAL CONFERENCE ON ENVIRONMENTAL TOXICOLOGY (2ND) HELD AT FAIRBORN, OHIO ON 31 AUGUST, 1 AND 2 SEPTEMBER 1971. (U)

DEC 71 316P
CONTRACT: F33615-70-C-1046
PROJ: AF-6302
MONITOR: AMRL TR-71-120

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-727 022.

DESCRIPTORS: (*TOXICITY, *SYMPOSIA), (*HALOGENATED HYDROCARBONS, TOXICITY), (*AIR POLLUTION, TOXICITY), (*PROPELLANTS, TOXICITY), EXPOSURE(PHYSIOLOGY), PATHOLOGY, ELECTRON MICROSCOPY, GAS CHROMATOGRAPHY (U)

MAJOR TECHNICAL AREAS DISCUSSED INCLUDED TOXICOLOGICAL EVALUATION OF VOLATILE HALOGENATED COMPOUNDS, PROTECTION OF THE PUBLIC AGAINST AIR POLLUTION AND TOXICOLOGICAL PROBLEMS WITH AIRCRAFT, MISSILES, AND SPACE VEHICLES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 751 898 13/2
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

TECHNICAL REPORT BIBLIOGRAPHY. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
AUG 72 147P HOFFNAGLE,GALE F. ;
REPT. NO. EHL-M-72M-14

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, AIR FORCE RESEARCH), (*WATER POLLUTION, AIR FORCE RESEARCH), (*INDUSTRIAL MEDICINE, AIR FORCE RESEARCH), (*RADIATION HAZARDS, AIR FORCE RESEARCH), CHEMICAL ANALYSIS, MICROWAVES, LASERS, ENTOMOLOGY, CALIFORNIA (U)
IDENTIFIERS: MCCLELLAN AIR FORCE BASE, *NOISE POLLUTION, ELECTROMAGNETIC RADIATION HAZARDS (U)

A BIBLIOGRAPHY OF ALL UNCLASSIFIED TECHNICAL REPORTS PREPARED BY USAF ENVIRONMENTAL HEALTH LABORATORY MCCLELLAN IS PRESENTED. IT CONTAINS A LISTING BY SUBJECT MATTER AND A LISTING OF ALL REPORTS BY YEAR WITH REPORT NUMBER AND ABSTRACT. THE REPORTS COVER MOST AREAS OF ENVIRONMENTAL TOPICS SUCH AS AIR, WATER, NOISE, AND RADIATION POLLUTION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 752 319 7/2 13/2
CALIFORNIA UNIV SAN DIEGO LA JOLLA DEPT OF PHYSICS

RARE-EARTH OXIDES OF MANGANESE AND COBALT RIVAL PLATINUM FOR THE TREATMENT OF CARBON MONOXIDE IN AUTO EXHAUST, (U)

MAY 72 5P VOORHOEVE,R. J. H. ; REMEIKA,J. P. ;FREELAND,P. E. ;MATTHIAS,B. T. ;

CONTRACT: F44620-72-C-0017
PROJ: AF-9764
TASK: 976402
MONITOR: AFOSR TR-72-2219

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN SCIENCE, V177 P353-354, 28 JUL 72.
SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH BELL TELEPHONE LABS., MURRAY HILL, N. J.

DESCRIPTORS: (*EXHAUST GASES, OXIDATION), (*CARBON MONOXIDE, *OXIDATION), (*RARE EARTH COMPOUNDS, *CATALYSTS), AIR POLLUTION, OXIDES, SINGLE CRYSTALS, LANTHANUM COMPOUNDS, PRASEODYMIUM COMPOUNDS, NEODYMIUM COMPOUNDS (U)
IDENTIFIERS: *AIR POLLUTION, *CONTROL, AUTOMOBILE EXHAUST, *CATALYTIC REACTORS(EXHAUST SYSTEMS) (U)

THE PEROVSKITE-LIKE COMPOUNDS RE(1-X)PB(X)MNO3 AND RECOO3, WHERE RE (RARE EARTH) IS LANTHANUM, PRASEODYMIUM, OR NEODYMIUM, ARE ACTIVE CATALYSTS FOR THE OXIDATION OF CARBON MONOXIDE. CRUSHED SINGLE CRYSTALS OF THESE COMPOUNDS COMPARE FAVORABLY WITH COMMERCIAL PLATINUM CATALYSTS IN INITIAL ACTIVITY AND LIFETIME. THEREFORE, THESE COMPOUNDS ARE PROMISING SUBSTITUTES FOR PLATINUM IN DEVICES FOR THE CATALYTIC TREATMENT OF AUTO EXHAUST. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 752 534 6/10
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

AIR POLLUTION AND INDUSTRIAL HYGIENE EVALUATION OF MAINTENANCE SHOPS, TINKER AFB, OKLAHOMA. PART I. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
OCT 71 67P BURNETT,RONALD D. ;
REPT. NO. EHL-M-71M-21
PROJ: EHL-OAF-113

UNCLASSIFIED REPORT

DESCRIPTORS: (*INDUSTRIAL MEDICINE, MILITARY FACILITIES), (*AIR POLLUTION, *MILITARY FACILITIES), VENTILATION, JET ENGINES, MAINTENANCE, EXPOSURE(PHYSIOLOGY), ORGANIC SOLVENTS, HALOGENATED HYDROCARBONS, ETHYLENES, METALS, GAS ANALYSIS, PARTICLES, CLEANING, WELDING, AIR FORCE, OKLAHOMA (U)
IDENTIFIERS: INDOOR AIR POLLUTION, TINKER AIR FORCE BASE, ETHYLENE/TRICHLORO (U)

THE OKLAHOMA CITY AIR MATERIAL AREA (OCAMA), TINKER AFB HAS THE MAINTENANCE RESPONSIBILITY FOR THE J-57, J-75, TF-33, J-79, TF-41, AND TF-30 JET ENGINES. ALL OF THE MAJOR INDUSTRIAL PROCESSES ASSOCIATED WITH OVERHAUL OF THESE ENGINES ARE LOCATED IN A LARGE AIR CONDITIONED BUILDING. THE PRIMARY OBJECTIVES OF THE STUDY WERE THE EVALUATION OF POTENTIAL EXPOSURES TO WORKERS TO AIRBORNE CONTAMINANTS (INDUSTRIAL HYGIENE EVALUATIONS), GENERAL OR AMBIENT CONCENTRATIONS OF AIRBORNE CONTAMINANTS, AIR POLLUTION POTENTIAL OF PROCESS EXHAUST EMISSIONS, AND POSSIBLE CROSS CONTAMINATION BETWEEN PROCESS OUTLETS AND FRESH AIR INTAKES RESULTING FROM THE MAJOR INDUSTRIAL OPERATIONS LOCATED IN THE NORTH END OF THE BUILDING. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 752 578 21/7 13/6
DETROIT UNIV MICH

PISTON ENGINE COMBUSTION PARAMETERS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
MAY 72 39P HAMAN, ARTHUR C. ;
CONTRACT: DAAE07-68-C-2990
MONITOR: TACOM 11661

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTERNAL COMBUSTION ENGINES, *COMBUSTION), (*EXHAUST GASES, INTERNAL COMBUSTION ENGINES), (*AIR POLLUTION, EXHAUST GASES), SPARK IGNITION ENGINES, CARGO VEHICLES, VOLUME, FEASIBILITY STUDIES, FUEL CONSUMPTION, PARTICLES, NITROGEN OXIDES, IGNITION (U)
IDENTIFIERS: M-151 TRUCKS(1/4-TON), *VARIABLE COMPRESSION RATIO (U)

AN INVESTIGATION WAS MADE INTO THE TECHNICAL FEASIBILITY OF THE APPLICATION OF THE VARIABLE COMPRESSION RATIO CONCEPT TO THE M-151 1/4 TON UTILITY TRUCK ENGINE AND TO DETERMINE THE EFFECT OF VARIOUS ENGINE PARAMETERS ON PARTICULATE EMISSIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 752 581 21/4 13/2 21/5
ESSO RESEARCH AND ENGINEERING CO LINDEN N J GOVERNMENT RESEARCH LAB

FUEL MODIFICATION FOR ABATEMENT OF AIRCRAFT TURBINE ENGINE OXIDES OF NITROGEN EMISSIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 26 APR 71-31 MAY 72, OCT 72 129P SHAW,HENRY ;
REPT. NO. GRU.1GDJA.72
CONTRACT: F33615-71-C-1575
PROJ: AF-3066
TASK: 306605
MONITOR: AFAPL TR-72-80

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIRCRAFT ENGINES, *EXHAUST GASES), (*NITROGEN OXIDES, AIRCRAFT ENGINES), (*AIR POLLUTION, NITROGEN OXIDES), (*FUEL ADDITIVES, *JET ENGINE FUELS), CHELATE COMPOUNDS, COBALT COMPOUNDS, IRON COMPOUNDS, MAGNESIUM COMPOUNDS, COPPER COMPOUNDS, MATHEMATICAL MODELS, COMBUSTION, CONCENTRATION(CHEMISTRY), NUMERICAL ANALYSIS, COLLOIDS, GAS TURBINES, GAS ANALYSIS (U)
IDENTIFIERS: ACETYLACETONATE COMPLEXES, *AIR POLLUTION, *CONTROL, COMPUTER AIDED ANALYSIS, FORTRAN, FORTRAN 4 PROGRAMMING LANGUAGE (U)

THE REPORT DESCRIBES A BROAD EXPERIMENTAL PROGRAM THAT WAS UNDERTAKEN TO ASSESS THE FEASIBILITY OF REDUCING NO(X) FROM AIRCRAFT GAS TURBINE ENGINES BY FUEL MODIFICATION. THE ESSO HIGH PRESSURE CANNULAR COMBUSTOR WAS USED TO SIMULATE THE CHARACTERISTIC EMISSIONS OF GAS TURBINES AT FULL POWER OPERATION. OVER 70 FUEL MODIFICATIONS WERE TESTED USING JET A AS THE BASE FUEL. SOLUBLE COMPOUNDS OF COBALT, IRON, MAGNESIUM, AND COPPER REDUCE NO(X) BY AS MUCH AS 30% WHEN ADDED TO THE FUEL AT A TREAT RATE OF UP TO 0.5% (W). NONE OF THE INVESTIGATED ADDITIVES WERE FULLY ACCEPTABLE BECAUSE OF THE RELATIVELY LOW NO(X) REDUCTION THAT WAS OBTAINED EVEN WITH HIGH ADDITIVE TREAT RATES. A SIMPLE EXPRESSION WAS DERIVED WHICH IS USEFUL IN ESTIMATING NO LEVELS IN GAS TURBINE COMBUSTORS WHEN EQUILIBRIUM NO(X) CONCENTRATIONS AND TEMPERATURE ARE KNOWN. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 753 095 13/2 21/5 21/7
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB OHIO

ASSESSMENT OF POLLUTANT MEASUREMENT AND CONTROL GOALS FOR MILITARY AIRCARFT ENGINES. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT., NOV 72 71P BLAZOWSKI,WILLIAM S. ; HENDERSON,ROBERT E. ;
REPT. NO. AFAPL-TR-72-102
PROJ: AF-3048, AF-3066
TASK: 304805, 306605

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*AIRCRAFT ENGINES, *EXHAUST GASES), REVIEWS, AIR FORCE, SPECIFICATIONS, STANDARDS, GAS ANALYSIS, SPARK IGNITION ENGINES, JET ENGINES, AFTERBURNERS, PARTICLES, CARBON MONOXIDE, HYDROCARBONS, NITROGEN OXIDES, PERFORMANCE(ENGINEERING), MILITARY REQUIREMENTS (U)
IDENTIFIERS: AIR POLLUTION STANDARDS, *AIRCRAFT EXHAUST, SMOKE, JET ENGINE EXHAUST (U)

THE PROBLEM OF MASS EMISSSIONS FROM AIRCRAFT GAS TURBINE ENGINES IS BRIEFLY REVIEWED AND THE ASPECTS OF THIS PROBLEM WHICH ARE UNIQUE TO MILITARY AIRCRAFT OPERATION ARE DISCUSSED. POLLUTANT MEASUREMENT TECHNOLOGY AND THE EXISTING DATA BASE ARE SUMMARIZED AND CANDIDATE CONTROL TECHNIQUES ARE IDENTIFIED. PROPOSED ENVIRONMENTAL PROTECTION AGENCY REGULATIONS FOR AIRCRAFT ENGINE EMISSIONS ARE EXAMINED IN TERMS OF THEIR IMPACT ON AND APPLICATION TO MILITARY ENGINES. IT IS CONCLUDED THAT THE SPECIAL CONSIDERATIONS, BOTH PERFORMANCE AND OTHERWISE, WHICH MUST BE AFFORDED TO MILITARY AIRCRAFT PROHIBIT DIRECT APPLICATION OF THE EPA REGULATIONS. THE REPORT CONCERNS AIR FORCE EMISSION LIMITATION GOALS ESTABLISHED IN LIGHT OF THESE EFFORTS. MAXIMUM ALLOWABLE IDLE COMBUSTION INEFFICIENCY, OXIDE OF NITROGEN EMISSION (1BM/1000 LBM FUEL), AND SMOKE NUMBER ARE SPECIFIED. THE RATIONALE BEHIND USING THESE PARAMETERS, AND THE MEANS BY WHICH THE NUMERICAL GOALS WERE DERIVED ARE DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 754 008 13/2
GRUMMAN AEROSPACE CORP BETHPAGE N Y RESEARCH DEPT

THE GRUMMAN AIR MONITOR SYSTEM. (U)

DESCRIPTIVE NOTE: RESEARCH REPT.,
NOV 72 28P FOREMAN, K. M. ;
REPT. NO. RM-559

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, SAMPLING), SAMPLERS, GAS ANALYSIS, MONITORS, COLLECTING METHODS, BAGS (U)

AN AUTOMATED AIR SAMPLING SYSTEM HAS BEEN DEVELOPED THAT CAN BE USED IN ANY TRANSPORTATION VEHICLE TO MONITOR LOCAL AIR QUALITY. THIS SYSTEM IS PARTICULARLY USEFUL FOR A CONCEPT TO OBTAIN WORLDWIDE PROFILES OF AIR QUALITY, FOR EXAMPLE, USING COMMERCIAL AIRLINERS. THE SYSTEM CONSISTS OF A CONTROLLER MODULE AND MODULAR COLLECTION AND STORAGE UNITS, EACH CONTAINING FIVE 5-LITER INFLATABLE BAGS. AUTOMATIC INFLATION OF ANY ONE ALUMINUM-COATED MYLAR OR TEFLON BAG OF AN INSTALLED SYSTEM CAN BE PROGRAMMED FOR ANY PORTION OF A 24-HOUR PERIOD. OPERATIONAL CHARACTERISTICS OF THE EQUIPMENT AND THE TECHNIQUE ARE GIVEN TO SHOW ITS SUITABILITY FOR THE PROPOSED APPLICATIONS. THE REPORT BRIEFLY DESCRIBES THE OPERATION OF THIS SYSTEM. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 754 918 4/1 13/2 7/4
LOCKHEED MISSILES AND SPACE CO PALO ALTO CALIF PALO ALTO RESEARCH LAB

STUDY OF HIGH-ALTITUDE AIRCRAFT WAKE DYNAMICS. TASK I. PROBLEM DEFINITION. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 72 208P HOSHIZAKI,H. ;CONTI,R. J. ;ANDERSON,L. B. ;REDLER,K. O. ;MEYER,J. W. ;
CONTRACT: DOT-OS-20082
MONITOR: DOT-TST 90-3

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXHAUST GASES, *STRATOSPHERE), (*CONDENSATION TRAILS, REACTION KINETICS), (*JET AIRCRAFT, CONDENSATION TRAILS), OZONE, WAKE, VORTICES, SUPERSONIC AIRCRAFT, NITROGEN OXIDES, CARBON MONOXIDE, HYDROCARBONS, TURBULENCE, ALDEHYDES, PHOTOCHEMICAL REACTIONS, THERMOCHEMISTRY, ATMOSPHERE MODELS, AIR POLLUTION, SULFUR COMPOUNDS, FREE RADICALS, DIFFUSION, FLUID MECHANICS (U)
IDENTIFIERS: AERONOMY, ATMOSPHERIC DENSITY, DIFFUSION (U)

THE PURPOSE OF THE HIGH-ALTITUDE AIRCRAFT WAKE DYNAMICS STUDY HAS BEEN TO INVESTIGATE THE CHEMICALLY REACTING WAKE OF AN AIRCRAFT FLYING AT SUBSONIC AND SUPERSONIC VELOCITY IN THE UPPER TROPOSPHERE AND STRATOSPHERE. THIS IS OF INTEREST BECAUSE OF THE EFFECTS THESE EXHAUST GASES COULD HAVE UPON THE CHEMICAL BALANCE IN THE STRATOSPHERE. IN THE STUDY, THE CHEMICAL AND FLUID MECHANICAL BEHAVIORS OF IMPORTANT EMISSION SPECIES WERE TRACED FROM THE TIME THE SPECIES EXITED THE ENGINE EXHAUST NOZZLE TO THE TIME AIRCRAFT-INDUCED PERTURBATIONS TO THE ATMOSPHERIC ENVIRONMENT WERE NO LONGER IMPORTANT. THE IMPORTANT FEATURES OF CHEMICALLY REACTING AIRCRAFT WAKES HAVE BEEN IDENTIFIED. THE AIRCRAFT WAKE IS MODELED IN TERMS OF THE JET REGIME (WAKE AGE APPROXIMATELY 10 SEC) VORTEX REGIME (APPROXIMATELY 100 SEC) AND THE WAKE DISPERSION REGIME (APPROXIMATELY 100 SEC). THE IMPORTANT THERMOCHEMICAL REACTIONS WERE FOUND TO TAKE PLACE IN THE JET REGIME. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 754 936 6/20 6/1

MONSANTO RESEARCH CORP DAYTON OHIO DAYTON LAB

RESEARCH PROGRAM ON BERYLLIUM OXIDE ANALYSIS AND TOXICITY. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. JUN 71-JUN 72, SEP 72 49P

SCRIBNER, WILLIAM G. ; CTVRTNICEK, THOMAS ; FRAME, GEORGE M. ; FORD, RODDEY E. ;

REPT. NO. MRC-DA-340

CONTRACT: F33615-71-C-1794

PROJ: AF-6302

TASK: 630203

MONITOR: AMRL TR-72-72

UNCLASSIFIED REPORT

DESCRIPTORS: (*TOXICITY, BERYLLIUM OXIDES), (*BERYLLIUM OXIDES, BLOOD ANALYSIS), TISSUES(BIOLOGY), CHEMICAL ANALYSIS, GAS CHROMATOGRAPHY, CANCER, AIR POLLUTION, EXHAUST GASES, PUBLIC HEALTH, INDUSTRIAL MEDICINE, BLOOD CHEMISTRY, CHELATE COMPOUNDS, HALOGENATED HYDROCARBONS (U)

IDENTIFIERS: CARCINOGENS (U)

THE CARCINOGENIC ACTIVITY OF BEO HAS BEEN SHOWN TO BE A FUNCTION OF THE TEMPERATURE TO WHICH THE BERYLLIUM HAS BEEN EXPOSED. EXAMINATION OF THE TOXICOLOGICAL PROPERTIES OF VARIOUS ROCKET EXHAUST PRODUCTS INDICATE THAT SOME PRODUCTS RESEMBLE HIGH-FIRED BEO IN THEIR LACK OF CARCINOGENIC ACTIVITY, WHILE OTHERS CONTAIN CONSIDERABLE QUANTITIES OF WATER SOLUBLE BERYLLIUM AND VARY IN TOXICITY. IN ANALYZING BLOOD SAMPLES IT IS NECESSARY TO OBTAIN THE TOTAL BE CONCENTRATION ALTHOUGH AS MENTIONED SOME FORMS ARE NOT AS REACTIVE AS OTHERS. THUS THE RESEARCH INVOLVED DEVISING REACTION CONDITIONS FOR THE CONVERSION OF LOW-FIRED BEO AND HIGH-FIRED BEO SUCH THAT THE REACTION MIXTURE WAS IN A FORM SUITABLE FOR THE GAS CHROMATOGRAPHIC MEASUREMENT OF BERYLLIUM. ALSO DISCUSSED IS THE APPLICABILITY OF THE TECHNIQUE FOR THE CONVERSION OF THE OXIDES IN BLOOD AND TISSUE MATRICES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 755 151 21/4 13/2
NAVAL AIR ENGINEERING CENTER PHILADELPHIA PA GROUND SUPPORT EQUIPMENT DEPT

GROUND SUPPORT EQUIPMENT: LOW POLLUTANT FUELS. (U)

DESCRIPTIVE NOTE: FINAL REPT. SEP 71-AUG 72,
SEP 72 32P WEIKEL,THOMAS DALE ;
REPT. NO. NAEC-GSED-59
PROJ: A340-5344/200-B/2F00-55-4401

UNCLASSIFIED REPORT

DESCRIPTORS: (*GASOLINE, SUBSTITUTES), (*FUELS, SUBSTITUTES), METHANE, HYDROGEN, GROUND SUPPORT EQUIPMENT, AMMONIA, CARBINOLS, ETHANOLS, ALKYNES, STEAM, EXTERNAL COMBUSTION ENGINES, INTERNAL COMBUSTION ENGINES, REVIEWS, HYDROCARBONS (U)
IDENTIFIERS: WANKEL ENGINES, *LIQUEFIED NATURAL GAS, METHANE/NITRO, ACETYLENE, *AIR POLLUTION, *CONTROL, STEAM ENGINES (U)

ALTERNATE FUELS, WITH AN EMPHASIS ON LIQUEFIED NATURAL GAS ARE BRIEFLY REVIEWED FOR FEASIBILITY OF USE IN AIRCRAFT GROUND SUPPORT EQUIPMENT TO REDUCE AIR POLLUTION. ELECTRICITY, STEAM, AND WANKEL ENGINES WERE ALSO INVESTIGATED. IT WAS CONCLUDED THAT THE MOST PRACTICAL SYSTEM IS THE USE OF LIQUEFIED PETROLEUM GAS AND CATALYTIC CONVERTERS ON PRESENT GASOLINE ENGINE SUPPORT EQUIPMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 755 358 6/20
SYSTEMED CORP DAYTON OHIO

TOXIC HAZARDS RESEARCH UNIT ANNUAL TECHNICAL REPORT: 1972. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 71-MAY 72, AUG 72 164P MACEWEN, J. D. ; VERNOT, E. H. ;
REPT. NO. W72003
CONTRACT: F33615-70-C-1046
PROJ: AF-6302
TASK: 630201
MONITOR: AMRL TR-72-62

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED OCT 71, AD-734 543.

DESCRIPTORS: (*TOXICITY, GASES), (*ORGANIC SOLVENTS, TOXICITY), (*ROCKET PROPELLANTS, TOXICITY), (*CONFINED ENVIRONMENTS, TOXICITY), RESPIRATION, HALOGENATED HYDROCARBONS, CHLORINE COMPOUNDS, STANDARDS, SILANES, BROMINE COMPOUNDS, CORROSIVE GASES, SULFIDES, CHLORINE, AMMONIA, SPACECRAFT CABINS, METHYL HYDRAZINES, BROMINE COMPOUNDS, URINE, ALUMINUM COMPOUNDS, AIR POLLUTION, INGESTION(PHYSIOLOGY) (U)
IDENTIFIERS: METHANE/DICHLORO, AIR POLLUTION EFFECTS(ANIMALS), ALUMINUM PHOSPHIDES, BROMINE FLUORIDE(BRF5), CHLORINE PENTAFLUORIDE, CHEMISTRY, CLINICAL MEDICINE, *HAZARDOUS MATERIALS, HYDROGEN BROMIDE, HYDROGEN SULFIDE, HYDROGEN CHLORIDE, ETHYL BROMIDE (U)

THE ACTIVITIES OF THE TOXIC HAZARDS RESEARCH UNIT (THRU) FOR THE PERIOD OF JUNE 1971 THROUGH MAY 1972 ARE REVIEWED IN THIS REPORT. ACUTE INHALATION TOXICITY EXPERIMENTS WERE CONDUCTED ON HYDROGEN CHLORIDE (HCL) GAS AND AEROSOL, ETHYL BROMIDE (C2H5BR), HYDROGEN BROMIDE (HBR), HYDROGEN SULFIDE (H2S), AMMONIA (NH3), CHLORINE (CL2), AND SILANE (SIH4). SUBACUTE TOXICITY STUDIES WERE CONDUCTED ON CHLORINE PENTAFLUORIDE (CLF5), DICHLOROMETHANE (CH2CL2) AND COAL TAR VOLATILES. FURTHER TOXICITY STUDIES OF SUBACUTE AND CHRONIC RESPONSES TO INHALED MONOMETHYLHYDRAZINE (MMH) ARE ALSO DESCRIBED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-755 603 6/20

CALIFORNIA UNIV SANTA BARBARA INST OF ENVIRONMENTAL STRESS

CARBON MONOXIDE AND HUMAN VIGILANCE. A DELETERIOUS EFFECT OF PRESENT URBAN CONCENTRATIONS, (U)

MAY 71 6P HORVATH, STEVEN M. ;DAHMS, THOMAS E. ;O'HANLON, JAMES F. ;

CONTRACT: AF-AFOSR-1653-69
PROJ: AF-9777
MONITOR: AFOSR TR-73-0177

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN ARCHIVES OF ENVIRONMENTAL HEALTH, V23 P343-347 NOV 71.

SUPPLEMENTARY NOTE: REVISION OF REPORT DATED 9 APR 71.

DESCRIPTORS: (*CARBON MONOXIDE, ATTENTION), (*AIR POLLUTION, CARBON MONOXIDE), (*TOXICITY, CARBON MONOXIDE), RESPIRATION, PERFORMANCE(HUMAN), RESPIRATORY SYSTEM, CARDIOVASCULAR SYSTEM, URBAN AREAS (U)

THE STUDY WAS CONDUCTED TO DETERMINE WHETHER CARBON MONOXIDE GAS IS A FACTOR RESPONSIBLE FOR DETERIORATION OF VIGILANCE IN MEN BREATHING POLLUTED AIR. TEN SUBJECTS WERE EXPOSED FOR SLIGHTLY LONGER THAN TWO HOURS, ON SEPARATE OCCASIONS, TO CO LEVELS APPROXIMATING THE AVERAGE (26 PPM) AND PEAK (111 PPM) LEVELS FOUND WHILE DRIVING IN URBAN TRAFFIC. DURING THE LAST HOUR OF EACH EXPOSURE THE SUBJECTS UNDERTOOK A STANDARD TEST OF VISUAL VIGILANCE. THEY ALSO UNDERTOOK THE TEST WHILE BREATHING AIR WITHOUT CO. BLOOD CARBOXYHEMOGLOBIN LEVELS WERE MEASURED PRIOR TO EXPOSURE, BEFORE AND AFTER THE TESTS. HEART RATES AND MINUTE VENTILATORY VOLUMES WERE ALSO MEASURED. THE RESULTS SHOWED THAT VIGILANCE WAS IMPAIRED BY BREATHING 111 PPM CO WHICH RAISED THE AVERAGE COHB LEVEL TO 6.6%. HEART RATES AND MINUTE VENTILATORY VOLUMES WERE NOT AFFECTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 757 059 4/1 13/2
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA

ON THE PROBLEM OF ELIMINATING NITRIC OXIDE FROM JET-ENGINE EXHAUST, (U)

AUG 72 7P CHAMBERLAIN, J. W. ;
REPT. NO. N-815
MONITOR: IDA/HQ 72-14447

UNCLASSIFIED REPORT

DESCRIPTORS: (*SUPERSONIC AIRCRAFT, *EXHAUST GASES), (*AIR POLLUTION, EXHAUST GASES), (*STRATOSPHERE, *OZONE), (*NITROGEN OXIDES, STRATOSPHERE), REACTION KINETICS, EXCITATION, ATOMS, OXYGEN, PHOTOCHEMICAL REACTIONS (U)
IDENTIFIERS: NITROGEN OXIDE(N2O), *NITROGEN OXIDE(NO), ATOMS, OXYGEN, *AERONOMY (U)

THE REPORT DISCUSSES THE POSSIBILITY THAT NITRIC OXIDE (NO) IN THE EXHAUST OF A FLEET OF SSTS COULD SERIOUSLY AFFECT THE OZONE EQUILIBRIUM OF THE STRATOSPHERE. IN THIS CONNECTION IT HAS BEEN SUGGESTED THAT ARTIFICIAL EXCITATION (VIBRATIONAL OR ELECTRONIC) OF NO IN THE COMBUSTION CHAMBER COULD INCREASE ITS REACTION RATE SO THAT NO IS CONVERTED INTO THE MORE INERT N2. THE MAXIMUM RATE THAT COULD LIKELY BE THUS OBTAINED SEEMS INADEQUATE TO DEPLETE THE NO ABUNDANCE APPRECIABLY. HOWEVER, THERE ARE STILL UNCERTAINTIES IN THE PARAMETERS AND THE MECHANISM CANNOT BE TOTALLY DISCOUNTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 757 859 13/2 14/2

ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

PRELIMINARY REPORT: JET ENGINE TEST CELL EMISSIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 70 26P BURNETT,RONALD D. ;
REPT. NO. EHL-M-70M-37
PROJ: EHL-M-E70-33

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXHAUST GASES, *AIR POLLUTION), (*TURBOJET ENGINES, CAPTIVE TESTS), AIRCRAFT ENGINES, SAMPLERS, SAMPLING, CARBON MONOXIDE, CARBON DIOXIDE, NITROGEN OXIDES, HYDROCARBONS, PARTICLES (U)
IDENTIFIERS: *JET ENGINE EXHAUST, J-57 ENGINES (U)

THE REPORT PRESENTS PUBLISHED JET ENGINE EMISSION DATA, TEST CELL EMISSION DATA COLLECTED AT MCCLELLAN AFB DURING THE OPERATION OF A J-57 TURBOJET ENGINE AT IDLE CONDITIONS AND DISCUSSES PROBLEMS INVOLVED IN SAMPLING TEST CELL EMISSIONS. IT WAS CONCLUDED THAT THE VARIABILITY OF EXISTING DATA INDICATES A NEED FOR A MORE REFINED STUDY OF JET ENGINE POLLUTANT EMISSION RATES. (AUTHOR MODIFIED ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-757 862 13/2
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

NOISE AND AIR POLLUTION EMISSIONS FROM NOISE SUPPRESORS FOR ENGINE TEST STANDS AND AIRCRAFT POWER CHECK PADS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JAN 72 138P BURNETT,RONALD D. ;
REPT. NO. EHL-M-71M-19
PROJ: EHL-M-AAF-127

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *TURBOJET ENGINES), (*JET ENGINE NOISE, TURBOJET ENGINES), SUPPRESSORS, CAPTIVE TESTS, SAMPLING, TEST EQUIPMENT, CARBON DIOXIDE, CARBON MONOXIDE, HYDROCARBONS, OXYGEN, NITROGEN OXIDES, PARTICLES, EXHAUST GASES, GAS FLOW, VELOCITY, ATMOSPHERIC PRECIPITATION, WIND, JET FIGHTERS, MILITARY FACILITIES (U)
IDENTIFIERS: NOISE REDUCTION, NOISE REDUCTION, ACOUSTIC MEASUREMENT, PLUMES, F-4 AIRCRAFT, F-4C AIRCRAFT, F-111A AIRCRAFT, J-79-17 ENGINES, TF-30 ENGINES, *EMISSION (U)

THE REPORT PRESENTS IN DETAIL THE RESULTS OF THE ENVIRONMENTAL POLLUTION STUDIES OF THE A/F 32A-13, A/F 32A-14, AND A/F 32T-2 JET ENGINE AND AIRCRAFT NOISE SUPPRESSORS. DETAILED DESCRIPTIONS OF THE SAMPLING AND MEASUREMENT METHODS USED DURING THESE STUDIES AS WELL AS REFINED JET ENGINE EMISSIONS FACTORS, DESCRIPTIONS OF EXHAUST PLUME FORMATION, AND DISCUSSIONS OF DOWNWIND RAINOUT OF LIQUID DROPLETS FROM THE EXHAUST PLUME ARE PRESENTED. THE NOISE DATA OBTAINED ARE ALSO PRESENTED BUT UNLIKE THE AIR POLLUTION DATA WILL HAVE LITTLE GENERAL APPLICATION. HOWEVER, THE NOISE DATA WILL BE OF USE TO THOSE BASES ANTICIPATING OR CURRENTLY USING THE NOISE SUPPRESSORS STUDIED. THE REPORT ALSO PROVIDES DATA TO BE USED FOR DETERMINING THE IMPACT OF ENGINE TESTING ON LOCAL AIR QUALITY. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 757 927 4/1
AIR FORCE CAMBRIDGE RESEARCH LABS L G HANSCOM FIELD MASS

TRANSPORT MEASUREMENTS IN THE STRATOSPHERE, (U)

JAN 73 16P ROSENBERG,NORMAN W. ;GOOD, ROBERT E. ;SIMMERMAN,SAMUEL P. ;
REPT. NO. AFCRL-TR-73-0021

UNCLASSIFIED REPORT
AVAILABILITY: AVAILABLE IN MICROFICHE ONLY.
SUPPLEMENTARY NOTE: PRESENTED AT THE CONFERENCE ON THE CLIMATIC IMPACT ASSESSMENT PROGRAM (2ND), SPONSORED BY DEPARTMENT OF TRANSPORTATION, CAMBRIDGE, MASS., 14-17 NOV 72.

DESCRIPTORS: (*STRATOSPHERE, TRANSPORT PROPERTIES), ATMOSPHERIC MOTION, DIFFUSION, AIR POLLUTION, EXHAUST GASES, JET TRANSPORT PLANES, WIND, OZONE, ATMOSPHERIC TEMPERATURE (U)
IDENTIFIERS: WIND VELOCITY (U)

THE OBJECTIVE OF THE STUDY IS TO DETERMINE THE ATMOSPHERIC TRANSPORT PROCESSES IN THE 15-30 KM ALTITUDE REGION WHERE SST EMISSION PRODUCTS ARE DEPOSITED. THE EXPERIMENTS ARE DESIGNED TO PROVIDE SIMULTANEOUS MEASUREMENTS OF TEMPERATURE, WIND VELOCITIES AND OZONE CONCENTRATION. THE EDDY DIFFUSION COEFFICIENT WILL BE ESTIMATED INDEPENDENTLY FROM WIND SHEAR FLUCTUATIONS, PHOTOGRAPHIC TRAIL IMAGE DENSITY FLUCTUATIONS, AND TEMPERATURE FLUCTUATIONS. (AUTHOR MODIFIED ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 758 587 13/2
RUTGERS - THE STATE UNIV NEW BRUNSWICK N J EAGLETON INST OF POLITICS

COMPARISON OF MOBILE SOURCE EMISSION FROM AIRCRAFT, AUTOMOBILES, BUSES, TRUCKS, RAILROADS, AND ELECTRIC TRAINS (PROJECT EAGLE). (U)

DESCRIPTIVE NOTE: FINAL REPT. MAR-DEC 72,
DEC 72 450P BRIGHT,COOPER ;LAMMINEN, TOIVO ;HANKO,KENNETH ;MULLALY,JAMES ;
CONTRACT: DOT-FA72WA-2877
MONITOR: FAA-EQ 73-2

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *TRANSPORTATION), AIRCRAFT, PASSENGER VEHICLES, CARGO VEHICLES, RAILROADS, CARBON MONOXIDE, HYDROCARBONS, NITROGEN OXIDES, OXIDIZERS, PARTICLES, SULFUR COMPOUNDS, PREDICTIONS, TABLES(DATA) (U)
IDENTIFIERS: *ABATEMENT, *AIR POLLUTION, AUTOMOBILES, BUSES(VEHICLES), COMPARISON, TRUCKS, EAGLE PROJECT, EMISSION (U)

THE STUDY COMPARES MOBILE SOURCE EMISSIONS FROM AIRCRAFT, AUTOMOBILES, BUSES, TRUCKS, RAILROADS, AND ELECTRIC TRAINS WITHIN THE CONTINENTAL UNITED STATES DURING THE PERIOD 1940-1980. THIS INCLUDES AIR POLLUTION CREATED BY OPERATIONS OF AIR CARRIERS AND MILITARY AND GENERAL AVIATION AIRCRAFT. THE POLLUTANTS CONSIDERED FOR ALL THESE MODES OF TRANSPORTATION ARE CARBON MONOXIDE, HYDROCARBONS AND NITROGEN OXIDES AND, IN ADDITION, FOR ELECTRIC TRAINS, POLLUTANT VALUES FOR SULFUR OXIDES AND PARTICULATES. IT IS DEMONSTRATED THAT FOR THE PERIOD 1940-1980 PUBLIC CARRIERS INCLUDING AIR TRANSPORTATION SHOW SIGNIFICANTLY LESS AIR POLLUTION THAN AUTOS BOTH IN GRAMS PER PASSENGER MILE AND TOTAL TONS. (AUTHOR MODIFIED ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 758 666 13/2
STANFORD UNIV CALIF DEPT OF OPERATIONS RESEARCH

A RANDOM MEASURE MODEL FOR THE EMISSION OF POLLUTANTS BY VEHICLES ON A HIGHWAY. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
FEB 73 33P JACOBS,PATRICIA A. ;
REPT. NO. TR-29
CONTRACT: N00014-67-A-0112-0031, NSF-GP-31392
PROJ: NR-042-265

UNCLASSIFIED REPORT

DESCRIPTORS: (*PASSENGER VEHICLES, AIR POLLUTION), (*AIR POLLUTION, MATHEMATICAL MODELS), STOCHASTIC PROCESSES, MEASURE THEORY, RANDOM VARIABLES, THEOREMS, EXHAUST GASES (U)
IDENTIFIERS: STATISTICAL PROCESSES, *AUTOMOBILE EXHAUST, CENTRAL LIMIT THEOREM, RANDOM PROCESSES (U)

THE REPORT DEVELOPS AND PROVES A MATHEMATICAL THEOREM FOR THE PREDICTION OF AIR POLLUTION EMISSIONS BY VEHICLES ON HIGHWAYS. THE THEOREM ASSUMES THE VELOCITY OF EACH VEHICLE TO BE INDEPENDENT OF THE VELOCITIES OF THE OTHER VEHICLES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 759 680 7/1 13/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

EXHAUST-CONVERTER UNIT, (U)

APR 73 6P KULIKOV,P. V. ;KORETS,S. B. ;LOPUKHIN,P. E. ;MEDVEDEV,YU. M. ; KRIKSUNOV,A. S. ;

REPT. NO. FTD-HT-23-294-73

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF PATENT (USSR) 207 757 P1-2, 22 DEC 72.

DESCRIPTORS: (*EXHAUST GASES, *COMBUSTION), (*WASTES(INDUSTRIAL), *AIR POLLUTION), COMBUSTION CHAMBERS, PATENTS, USSR (U)

IDENTIFIERS: *AIR POLLUTION CONTROL EQUIPMENT, TRANSLATIONS (U)

THE RUSSIAN PATENT DESCRIBES AN EXHAUST-CONVERSION INSTALLATION, WHICH INCLUDES A HOUSING WITH A FITTING MADE UP OF CERAMIC RINGS MOUNTED ON A FRAME WITH A FUEL TANK, FILTER, PUMP, HYDRAULIC CUTOFF VALVE, FAN, AND CONTROL PANEL. IN THE SYSTEM, FLUE OR EXHAUST GASES FROM STATIONARY SOURCES ARE MIXED WITH AN ATOMIZED FUEL AND COMBUSTED. IN ORDER TO INTENSIFY THE PROCESS OF OBTAINING INERT GAS FROM PRODUCTS OF LIQUID-FUEL COMBUSTION, THE INSTALLATION IS EQUIPPED WITH AN INDEPENDENT COMBUSTION CHAMBER WITH A FUEL NOZZLE, LOCATED IN THE HOUSING OF THE UNIT. (AUTHOR MODIFIED ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 760 395 7/4 13/2

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE VA

CATALYTIC COMBUSTION OF CARBON MONOXIDE IN GASOLINE ENGINE EXHAUST USING MANGANESE CATALYSTS (KATALITICHESKOE DOZHIGANIE OKISI YGLERODA OTRABOTANNNYKH GAZON BENZINOVYKH), (U)

MAR 73 57P CHAGUNAVA, V. T. ;

REPT. NO. FSTC-HT-23-1248-72

PROJ: FSTC-T7023012301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MONO. MARGANTSEVYE KATALIZATORY DLYA NEKOTORYH REAKTSII, N.P., 1969 P128-174.

DESCRIPTORS: (*AIR POLLUTION, *CARBON MONOXIDE), (*EXHAUST GASES, *CATALYSIS), (*CATALYSTS, MANGANESE), INTERNAL COMBUSTION ENGINES, GASOLINE, TESTS, OXIDATION, USSR, CHEMICAL REACTIONS, REACTION KINETICS, COPPER COMPOUNDS (U)

IDENTIFIERS: AIR POLLUTION, CONTROL, *CATALYTIC REACTORS(EXHAUST SYSTEMS), TRANSLATIONS (U)

IN THE LAST 15 TO 20 YEARS, COMPLEX RESEARCH WORK IN THE LOWERING OF THE TOXICITY OF EXHAUST GASES OF THE INTERNAL COMBUSTION ENGINE HAS BEEN DONE. OUT OF THE VARIOUS PROPOSED METHODS, THE BROADEST DISSEMINATION WAS ACHIEVED BY THE METHOD OF THE CATALYTIC AFTERBURNING OF THE PRODUCTS OF INCOMPLETE FUEL COMBUSTION IN NEUTRALIZERS. IN THE EXISTING CATALYTIC NEUTRALIZERS THAT HAVE BEEN CONSTRUCTED ABROAD AS WELL AS IN THE SOVIET UNION, PLATINUM EITHER ON VARIOUS CARRIERS OR IN ALLOYS WITH OTHER COMPONENTS WAS USED AS THE CATALYZER. MANGANESE CATALYZERS FOR THE AFTERBURNING OF THE CARBON MONOXIDE IN EXHAUST GASES ARE BEING INVESTIGATED IN THE ACADEMY OF SCIENCES OF THE GEORGIAN SOVIET SOCIALIST REPUBLIC. PRELIMINARY RESULTS OF THESE INVESTIGATIONS ARE GIVEN IN THE PRESENT REPORT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 762 935 21/5 13/2
PRATT AND WHITNEY AIRCRAFT WEST PALM BEACH FLA

LOW-POWER TURBOPROPULSION COMBUSTOR EXHAUST EMISSIONS. VOLUME I. THEORETICAL FORMULATION AND DESIGN ASSESSMENT. (U)

DESCRIPTIVE NOTE: FINAL REPT. 30 JUN 71-30 NOV 72,
JUN 73 330P MOSIER,STANLEY A. ;ROBERTS, RICHARD ;
REPT. NO. PWA-FR-5415
CONTRACT: F33615-71-C-1870
PROJ: AF-3066
TASK: 306605
MONITOR: AFAPL TR-73-36-VOL-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*GAS TURBINES, *EXHAUST GASES), (*AIR POLLUTION, EXHAUST GASES), TURBOFAN ENGINES, HYDROCARBONS, CARBON MONOXIDE, COMBUSTION CHAMBERS, MATHEMATICAL MODELS, PREDICTIONS, CARBON DIOXIDE, TESTS, DESIGN, GAS ANALYSIS, CONCENTRATION(CHEMISTRY) (U)
IDENTIFIERS: CHEMICAL COMPOSITION, GAS SAMPLING (U)

AN EXPLORATORY DEVELOPMENT PROGRAM WAS UNDERTAKEN TO FORMULATE AND DEVELOP A COMPUTERIZED, THEORETICAL MODEL TO PREDICT EMISSIONS CHARACTERISTICS OF GAS TURBINE ENGINE COMBUSTORS. IN SUPPORT OF THE MODEL DEVELOPMENT, A NUMBER OF EXPERIMENTAL STUDIES WERE CONDUCTED TO PROVIDE INFORMATION FOR STRUCTURING THE FORMULATION AND FOR GUIDING ITS REFINEMENT. THE PROGRAMS WERE INCORPORATED TO PROVIDE DATA, UNAVAILABLE IN THE COMBUSTION LITERATURE, ON REACTION RATES UNDER REALISTIC BURNER OPERATING CONDITIONS. THE SURVEY PROGRAM WAS INCORPORATED TO PROVIDE BASELINE EMISSIONS CHARACTERISTICS FOR A NUMBER OF EXISTING GAS TURBINE ENGINE BURNERS AGAINST WHICH THE GENERALITY OF THE MODEL COULD BE ASSESSED. INDIRECT SUPPORT OF THE MODEL WAS PROVIDED BY A COMPREHENSIVE TEST PROGRAM IN WHICH COMPONENT DESIGN TECHNIQUES FOR REDUCING LOW-POWER EMISSIONS BY CONTROLLING THE PRIMARY-ZONE EQUIVALENCE RATIO WERE EVALUATED USING A RESEARCH COMBUSTOR. CONTROL MEANS INCLUDED AIR-STAGING, FUEL-STAGING, AND PREMIXING OF FUEL AND AIR PRIOR TO THEIR BEING INTRODUCED INTO THE COMBUSTOR. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 763 119 13/2 21/5
UNITED AIRCRAFT RESEARCH LABS EAST HARTFORD CONN

ANALYSIS OF JET ENGINE TEST CELL POLLUTION ABATEMENT METHODS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. 21 FEB 72-21 FEB 73, MAY 73 230P ROBSON,F. L. ;KESTEN,A. S. ;LESSARD,R. D. ;
CONTRACT: F29601-72-C-0049
PROJ: AF-683M
MONITOR: AFWL TR-73-18

UNCLASSIFIED REPORT

DESCRIPTORS: (*JET ENGINES, *EXHAUST GASES), (*AIR POLLUTION, JET ENGINES), (*TEST FACILITIES, AIR POLLUTION), CAPTIVE TESTS, COST EFFECTIVENESS, GAS FLOW, TEST METHODS, PARTICLES, NITROGEN OXIDES, AIRCRAFT ENGINES, FUEL ADDITIVES, METALORGANIC COMPOUNDS, JET ENGINE NOISE (U)
IDENTIFIERS: NOISE REDUCTION, *AIR POLLUTION, *CONTROL, AIR POLLUTION CONTROL EQUIPMENT, SMOKE, STATIC TESTS, *EMISSION (U)

IN ORDER TO ASCERTAIN WHAT METHODS OF EFFLUENT TREATMENT WOULD BE APPLICABLE TO JET ENGINE TEST CELLS, A STUDY WAS UNDERTAKEN TO ASSESS CURRENT AND PROJECTED EXHAUST GAS TREATMENT TECHNOLOGY AND TO ESTABLISH THAT TECHNOLOGY WHICH RESULTS IN THE MOST EFFECTIVE CLEANUP PER DOLLAR. EMISSION FACTOR DATA FOR THE MOST PREVALENT AIR FORCE ENGINES WERE GATHERED TO DETERMINE WHAT LEVELS OF POLLUTANTS WERE TO BE DEALT WITH. A THEORETICAL MODEL OF A TEST CELL AUGMENTOR TUBE WITH LIQUID INJECTION WAS DEVELOPED TO AID IN ESTIMATING TOTAL SYSTEM FLOW RATES AS A FUNCTION OF ENGINE OPERATING PARAMETERS. THE AIR FORCE TEST CELL EMISSION REDUCTION PROGRAM CAN BE CHARACTERIZED AS HAVING THREE GOALS WHICH ARE DISCUSSED. THE FIRST OR IMMEDIATE GOAL IS ONE OF REDUCING VISIBLE EMISSIONS. THE SECOND OR NEAR-TERM GOAL INVOLVES MEETING PARTICULATE MASS CRITERIA SUCH AS MIGHT BE PROMULGATED BY THE ENVIRONMENTAL PROTECTION AGENCY. THE THIRD OR FUTURE GOAL WOULD BE CONCERNED WITH MEETING THE MASS EMISSION REGULATIONS FOR NOX. (MODIFIED AUTHOR ABSTRACT) (U)

AD-A041 800 DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA F/G 13/2
ENVIRONMENTAL POLLUTION: AIR POLLUTION - EXHAUST GASES.(U)
JUL 77
UNCLASSIFIED DDC/BIB-77/08 NL

2 OF 4
AD A041800

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL N

AD- 763 471 4/1 13/2
STANFORD RESEARCH INST MENLO PARK CALIF

STRATOSPHERIC ELECTRICITY.

DESCRIPTIVE NOTE: FINAL REPT.,
APR 73 149P HAKE,RICHARD D. ;PIE
EDWARD T. ;VIEZEE,WILLIAM ;
CONTRACT: N00014-72-C-0259
PROJ: SRI-1724

UNCLASSIFIED REPORT

DESCRIPTORS: (*SUPERSONIC FLIGHT, STATIC ELE
(*STRATOSPHERE, *STATIC ELECTRICITY), (*EXHA
*SUPERSONIC AIRCRAFT), TEMPERATURE, WAKE, OZ
VAPOR, AIR POLLUTION, CARBON DIOXIDE, ELECTR
CONDUCTIVITY, COSMIC RAYS, IONS, AEROSOLS

THE MOTIVATION BEHIND THE STUDY DESCRIBED I
REPORT IS THE POSSIBLE CLIMATIC IMPACT OF C
FLEET OF SUPERSONIC TRANSPORTS (SSTS). THE
REPORT FIRST SUMMARIZES INFORMATION ON THE
PROPERTIES OF THE STRATOSPHERE AND ON ITS G
PARTICULATE TRACE CONSITUENTS. A CRITICAL R
EXPERIMENTAL DATA ON STRATOSPHERE ELECTRIFI
THEN PRESENTED. INFORMATION IS GIVEN ON PRO
OF CONDUCTIVITY (POSITIVE AND NEGATIVE); SM
(CLUSTER-) ION DENSITIES (POSITIVE AND
NEGATIVE); AND ELECTRIC FIELD. SOME OF THE
EXPERIMENTAL RESULTS ARE SHOWN TO BE SUSPEC
MORE RELIABLE EXPERIMENTAL RESULTS, OBTAINE
10 AND 30 KM, INDICATE CONDUCTIVITIES INCRE
MONOTONICALLY WITH INCREASING HEIGHT; ELECT
DECREASING MONOTONICALLY AS HEIGHT INCREASE
ION DENSITIES OF THE ORDER OF THOUSANDS PE
WITH A MAXIMUM AT ABOUT 15 KM; LITTLE SPACE
CONSTANT VERTICAL AIR/EARTH CURRENT; AND PO
NEGATIVE SMALL-ION MOBILITIES. FINE- AND LA
SCALE SPATIAL AND TEMPORAL VARIATIONS ARE
SUPERIMPOSED UPON THE GENERAL TREND OF THE
SIMPLE THEORY SHOWS THAT THE MAJOR PHENOME
STRATOSPHERIC ELECTRICITY CAN BE MOSTLY EX
CONSIDERING ION PRODUCTION BY COSMIC RAYS
ION LOSS ONLY BY MUTUAL NEUTRALIZATION
(RECOMBINATION). IT WAS CONCLUDED THAT
STRATOSPHERIC ELECTRIFICATION IS LITTLE AF
GASEOUS CONSTITUENTS, BUT SHOULD BE QUITE
TO CHANGES IN THE NUMBER DENSITY AND SIZE
DISTRIBUTION OF THE STRATOSPHERIC AEROSOL.
(MODIFIED AUTHOR ABSTRACT)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 764 717 21/5 13/2 4/1
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

MEASUREMENT OF EXHAUST EMISSIONS FROM A 185-GE-5B ENGINE AT SIMULATED HIGH-ALTITUDE SUPERSONIC FREE-STREAM FLIGHT CONDITIONS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT., 15 DEC 72-10 JAN 73,
JUL 73 139P GERMAN,R. C. ;HIGH,M. D. ;ROBINSON,C. E. ;
REPT. NO. AEDC-TR-73-103
CONTRACT: DOT-AS-20024
PROJ: ARO-PA038, ARO-PB038
MONITOR: FAA-RD 73-92

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO, INC., TULLAHOMA, TENN. REPT. NO. ARO-PWT-TR-73-49.

DESCRIPTORS: (*TURBOJET ENGINES, *EXHAUST GASES), (*STRATOSPHERE, EXHAUST GASES), (*AIR POLLUTION, STRATOSPHERE), CLIMATE, GAS ANALYSIS, CAPTIVE TESTS, SUPERSONIC COMBUSTION, TABLES(DATA), CARBON DIOXIDE, CARBON MONOXIDE, HYDROCARBONS, NITROGEN OXIDES, PARTICLES (U)
IDENTIFIERS: J-85 ENGINES, J-85-GE-5 ENGINES (U)

EXHAUST EMISSIONS WERE MEASURED IN THE PLUME OF A J85-GE-5 TURBOJET ENGINE AS PART OF AN INVESTIGATION TO DETERMINE THE IMPACT ON THE CLIMATE OF A FLEET OF SUPERSONIC AIRCRAFT FLYING IN THE STRATOSPHERE. MEASUREMENTS WERE MADE FOR BOTH MILITARY AND PARTIAL AFTERBURNING POWER AT MACH NUMBERS AND SIMULATED ALTITUDES OF MACH 1.6/55,000 FT AND MACH 2.0/65,000 FT. A CONTINUOUS SAMPLING TECHNIQUE WAS USED TO MEASURE CARBON DIOXIDE, CARBON MONOXIDE, TOTAL UNBURNED HYDROCARBONS, OXIDES OF NITROGEN, AND PARTICULATES. THE EXPERIMENTAL RESULTS WERE COMPARED WITH THE CALCULATED EMISSION PROFILES AND WERE IN GOOD AGREEMENT. THE RESULTS REPRESENT THE ONLY AVAILABLE FULL-SCALE TURBOJET ENGINE EMISSION DATA TO DATE WHICH HAVE BEEN OBTAINED AT SIMULATED HIGH ALTITUDE WITH A SUPERSONIC EXTERNAL STREAM. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 764 854 13/2
NAVAL AIR ENGINEERING CENTER PHILADELPHIA PA GROUND SUPPORT EQUIPMENT DEPT

POLLUTION IN THE GROUND SUPPORT ENVIRONMENT. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JUL 73 28P ZACHARKIW,PETER B. ;WOMER, WILLIAM H. ;
REPT. NO. NAEC-GSED-69
PROJ: A340-5344/200-B/2F00-554-401

UNCLASSIFIED REPORT

DESCRIPTORS: (*NAVAL AIR STATIONS, AIR POLLUTION), (*GROUND SUPPORT EQUIPMENT, *AIR POLLUTION), NOISE, EXHAUST GASES, STANDARDS (U)
IDENTIFIERS: NOISE POLLUTION, NOISE REDUCTION, AIR POLLUTION CONTROL EQUIPMENT, RECOMMENDATIONS (U)

THE STUDY WAS INITIATED TO SURVEY THE NAVAL AIR/GROUND SUPPORT ENVIRONMENT TO DETERMINE IF THERE ARE POLLUTION PROBLEMS RELATED TO GROUND SUPPORT EQUIPMENT. THREE MAJOR OBJECTIVES EXIST IN THIS STUDY. (A) TO IDENTIFY SPECIFIC POLLUTION-CAUSING SYSTEMS OF ALL TYPES IN THE NAVY GROUND SUPPORT ENVIRONMENT. (B) TO RECOMMEND PRACTICAL SOLUTIONS TO THESE SPECIFIC POLLUTION-CAUSING PROBLEMS. (C) TO INSURE THAT ALL FUTURE PROCUREMENTS OF GSE ARE AS 'POLLUTION FREE' AS PRACTICABLE, BY ALIGNING THE POLLUTION LIMITATIONS OF GSE WITH THE CORRESPONDING REQUIREMENTS FOR SIMILAR EQUIPMENT ESTABLISHED BY EPA. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 764 893 4/1
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION SILVER SPRING MD AIR RESOURCES LABS

LONG-RANGE TRANSPORT AND DIFFUSION EXPERIMENTS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
MAY 73 89P FERBER,GILBERT J. ;LIST,
ROBERT J. ;
CONTRACT: ARPA ORDER-1841
PROJ: VT/1416

UNCLASSIFIED REPORT

DESCRIPTORS: (*ATMOSPHERIC MOTION, *TRACER STUDIES), (*AIR POLLUTION, ATMOSPHERIC MOTION), RADIOACTIVE ISOTOPES, KRYPTON, FEASIBILITY STUDIES, HALOGENATED HYDROCARBONS, FLUORINE COMPOUNDS, SULFUR COMPOUNDS, TEST METHODS (U)
IDENTIFIERS: ATMOSPHERIC DENSITY, DIFFUSION, PLUMES, FIELD TESTS, KRYPTON 85, SULFUR HEXAFLUORIDE (U)

THE PURPOSE OF THE PROJECT IS TO INVESTIGATE THE FEASIBILITY OF CONDUCTING LONG-RANGE ATMOSPHERIC TRACER EXPERIMENTS TO STUDY TRANSPORT AND DIFFUSION OF AIR POLLUTION PLUMES OVER CONTINENTAL DISTANCES. THE STUDY CONSIDERED THE FEASIBILITY OF A SERIES OF EXPERIMENTS IN WHICH A TRACER GAS WOULD BE RELEASED IN THE WESTERN U.S. AND CROSS-COUNTRY AIR SAMPLING WOULD BE CARRIED OUT TO DETERMINE THE DISTRIBUTION OF THE TRACER AS A FUNCTION OF TIME AND DISTANCE FROM THE SOURCE, AT GROUND LEVEL AND ALOFT. TWO MAIN ALTERNATIVES WERE CONSIDERED. THE FIRST INVOLVES TAKING ADVANTAGE OF A SOURCE OF OPPORTUNITY, 85KR EMITTED FROM A NUCLEAR FUEL REPROCESSING PLANT, TO OBTAIN LONG-RANGE PLUME DATA. THE SECOND WOULD USE CF2BR2 OR C2F4BR2. A SHORT RANGE EVALUATION WAS MADE USING SF6 AS A CONTROL TRACER. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 764 987 13/2 21/5
GENERAL MOTORS CORP INDIANAPOLIS IND DETROIT DIESEL ALLISON DIV

INVESTIGATION OF AIRCRAFT GAS TURBINE COMBUSTOR HAVING LOW MASS EMISSIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
APR 73 726P TROTH,D. L. ;VERDOUW,A. J. ;VERKAMP,F. J. ;
REPT. NO. ERD-7725
CONTRACT: DAAJ02-72-C-0005
PROJ: DA-1-G-162207-AA-71
TASK: 1-G-162207-AA-7102
MONITOR: USAAMRDL TR-73-6

UNCLASSIFIED REPORT

DESCRIPTORS: (*GAS TURBINES, *AIR POLLUTION), (*EXHAUST GASES, GAS TURBINES), COMBUSTION CHAMBERS, TURBINE PARTS, HELICOPTER ENGINES, CARBON MONOXIDE, NITROGEN OXIDES, HYDROCARBONS, TESTS, PARTICLES (U)
IDENTIFIERS: AIR POLLUTION CONTROL EQUIPMENT, *AIR POLLUTION, *CONTROL, BASELINE MEASUREMENTS (U)

THE OBJECTIVE OF THIS ONE-YEAR PROGRAM WAS TO DEVELOP AND DEMONSTRATE EMISSION ABATEMENT TECHNOLOGY SUFFICIENT TO OBTAIN A 50% OVERALL REDUCTION IN GAS TURBINE ENGINE MASS EMISSIONS (CO, CXHY, NOX AND SMOKE) WITH NO INCREASE IN ANY INDIVIDUAL POLLUTANT WHEN TESTED OVER A TYPICAL ARMY LIGHT OBSERVATION HELICOPTER (LOH) DUTY CYCLE. THE SELECTED BASELINE WAS THE ARMY T63-A-5A GAS TURBINE ENGINE COMBUSTOR. SEVENTEEN POTENTIAL LOW-EMISSION COMBUSTORS, EACH INCORPORATING ONE OR MORE OF THE SELECTED CONCEPTS, WERE TESTED TO DETERMINE THEIR EMISSION PERFORMANCE. EXPERIMENTAL RESULTS INDICATED THAT SEVERAL DESIGNS HAD THE POTENTIAL FOR MEETING THE PROGRAM OBJECTIVES. TWO COMBUSTORS SELECTED FOR FINAL EXPERIMENTAL EVALUATION WERE THE 'PRECHAMBER' AND 'MODIFIED CONVENTIONAL.' THE LOW-EMISSION FEATURE IN THE 'PRECHAMBER' COMBUSTOR WAS PREMIX/PREVAPORIZATION. THE 'MODIFIED CONVENTIONAL' COMBUSTOR INCORPORATED FOUR LOW-EMISSION FEATURES: AIRBLAST FUEL ATOMIZATION, DELAYED DILUTION, CONVECTION COOLING, AND VARIABLE GEOMETRY. BOTH OF THESE COMBUSTORS MET THE EMISSION REDUCTION OBJECTIVES. EXPERIMENTAL RESULTS INDICATED THAT BOTH OF THESE LINERS CAN BE DEVELOPED TO MEET ALL OTHER CONVENTIONAL T63 COMBUSTOR REQUIREMENTS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 765 508 13/2 21/5 21/7
SCOTT RESEARCH LABS INC PLUMSTEADVILLE PA

EXHAUST EMISSIONS FROM MILITARY ENGINE GENERATOR SETS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. SEP 71-JAN 72,
JAN 72 131P SQUIRES,ROBERT ;
REPT. NO. SRL-1248-02-0172
CONTRACT: DAAK02-71-C-0522

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ADDENDUM DATED MAR 72 INSERTED.

DESCRIPTORS: (*MOTOR GENERATORS, *EXHAUST GASES), (*ENGINES, EXHAUST GASES), FUELS, INTERNAL COMBUSTION ENGINES, DIESEL ENGINES, RANKINE CYCLE, TURBINES, CARBURETORS, EXTERNAL COMBUSTION ENGINES, GASOLINE, GAS ANALYSIS, CARBON DIOXIDE, CARBON MONOXIDE, NITROGEN OXIDES, HYDROCARBONS, DATA, (U)DATA (U)
IDENTIFIERS: CATALYTIC REACTORS(EXHAUST SYSTEMS), SPECTROSCOPIC ANALYSIS, DIESEL ENGINE EXHAUST (U)

THE AUTHORS MEASURED AND DOCUMENTED THE EXHAUST EMISSION CHARACTERISTICS OF FOUR GASOLINE, SEVEN DIESEL, TWO TURBINE, ONE STRATIFIED CHARGE COMBUSTION, AND ONE RANKINE CYCLE POWERED ENGINE-GENERATOR SETS. COMPARATIVE EMISSIONS WERE ALSO MEASURED AND DOCUMENTED FOR SPECIFIED ENGINES EQUIPPED WITH VARIABLE JET CARBURETORS, CATALYTIC REACTORS, OZONATOR, OR AIR INJECTION SYSTEM. EXHAUST COMPONENT CONCENTRATIONS AND FUEL CONSUMPTION RATES WERE MEASURED AT SPECIFIED ENGINE OPERATING CONDITIONS (GOVERNED RPM AND VARIABLE LOADS). THE EXHAUST ANALYZER READINGS WERE CONVERTED TO POLLUTANT CONCENTRATIONS AND ARE PRESENTED IN THIS REPORT. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 766 648 21/5

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

EMISSION MEASUREMENTS OF A J93 TURBOJET ENGINE. (U)

DESCRIPTIVE NOTE: FINAL REPT. 8 JUN-31 JUL 72, SEP 73 98P DAVIDSON,D. L. ;DOMAL,A. F. ;

REPT. NO. AEDC-TR-73-132

PROJ: ARO-RA109

MONITOR: FAA-RD 73-66

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO, INC., TULLAHOMA, TENN. REPT. NO. ARO-ETF-TR-73-46.

DESCRIPTORS: (*TURBOJET ENGINES, EXHAUST GASES), (*EXHAUST GASES, GAS ANALYSIS), CARBON MONOXIDE, CARBON DIOXIDE, NITROGEN OXIDES, HYDROCARBONS, AIR POLLUTION, PARTICLES, SIMULATION (U)

IDENTIFIERS: FLIGHT SIMULATION, J-93 ENGINES (U)

EXHAUST GAS EMISSION MEASUREMENTS WERE MADE AT THE NOZZLE OF A J93 TURBOJET ENGINE AT SIMULATED FLIGHT CONDITIONS FROM SEA-LEVEL STATIC TO MACH 2.0 AT 75,000 FT AND MACH 2.6 AT 65,000 FT. REAL TIME MEASUREMENTS OF CO, CO2, CXHY, NO, AND NOX WERE TAKEN OVER A RANGE OF AFTER-BURNING AND NONAFTERBURNING ENGINE POWER SETTINGS USING A GAS SAMPLING SYSTEM DESIGNED TO ADHERE TO SAE ARP 1256 SPECIFICATIONS. IN ADDITION, NO AND OH WERE MEASURED IN SITU BY A NARROW-LINE UV SPECTRAL ABSORPTION TECHNIQUE. BATCH-TYPE MEASUREMENTS OF PARTICULATES AND OTHER TRACE CONSTITUENTS OF THE EXHAUST GAS WERE ALSO MADE. MAJOR RESULTS OF THE TEST WERE THAT EMISSIONS VARY SIGNIFICANTLY WITH COMBUSTOR INLET PRESSURE AND TEMPERATURE AND, THEREFORE, WITH MACH NUMBER AND ALTITUDE. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 768 120 13/2
ARMY MATERIEL COMMAND TEXARKANA TEX INTERN TRAINING CENTER

THE EFFECT OF EMISSIONS CONTROL REGULATIONS UPON INTERNAL COMBUSTION ENGINE MAINTENANCE, (U)

JUN 73 35P BINFORD, JOHN D. ;
REPT. NO. USAMC-ITC-1-73-02

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXHAUST GASES, MOTOR VEHICLE), (*INTERNAL COMBUSTION ENGINES, *MAINTENANCE), CALIFORNIA, LAW, COSTS (U)
IDENTIFIERS: ABATEMENT, AIR POLLUTION, AUTOMOBILE EXHAUSTS, REGULATIONS, AUTOMOBILE ENGINES, LEGISLATION, *AIR POLLUTION, *CONTROL (U)

A COMPREHENSIVE HISTORY OF EMISSIONS REGULATION AND DISCUSSION OF THEIR EFFECT UPON THE MAINTENANCE OF INTERNAL COMBUSTION ENGINES IS PRESENTED. THE FURTHER CONSTRAINT OF EMISSIONS REGULATIONS BY STATUTE IS PLACING AN INCREASING BURDEN UPON THE ENGINE DESIGNER: VARIOUS SOLUTIONS ARE EXAMINED AND EVALUATED. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 747 608 21/5 13/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

THE TOXICITY OF EXHAUST GASES FROM THE GAS-TURBINE ENGINE OF A DUMP TRUCK, (U)

MAY 72 12P SHTEINBERG,A. S. ;TSVETKOV, S. I. ;EVGRAFOV,K. G. ;ZOLOTAREVSKII,L. S.
;
REPT. NO. FTD-MT-24-1698-71
PROJ: AF-668A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF AVTOMOBILNAYA PROMYSHLENNOST (USSR) V36 N8 P6-7 1970, BY CHARLES T. OSTERTAG, JR.

DESCRIPTORS: (*EXHAUST GASES, *AIR POLLUTION), (*GAS TURBINES, EXHAUST GASES), (*CARGO VEHICLES, EXHAUST GASES), CONCENTRATION(CHEMISTRY), CARBON MONOXIDE, HYDROCARBONS, ALDEHYDES, NITROGEN OXIDES, CARBON BLACK, PARTICLES, USSR (U)
IDENTIFIERS: MOTOR TRUCKS, TRANSLATIONS, DUMP TRUCKS (U)

RESULTS ARE PRESENT FROM A STUDY CONDUCTED TO DETERMINE THE CONCENTRATION OF EXHAUST GASES FROM A 1200 HP MOTOR VEHICLE GAS TURBINE ENGINE. IT WAS FOUND THAT THESE GASES ARE ONE TENTH OF THOSE OF A DIESEL ENGINE OF THE SAME HORSEPOWER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 747 773 13/2 21/5
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

MEASUREMENT OF POLLUTANT EMISSIONS FROM AN AFTERBURNING TURBOJET ENGINE AT GROUND LEVEL. II. GASEOUS EMISSIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 22 JUN-21 SEP 71, AUG 72 65P LAZALIER,G. R. ;GEARHART, J. W. ;
REPT. NO. AEDC-TR-72-20
CONTRACT: F40600-73-C-0004
PROJ: AF-3066, ARO-RW-5239

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO, INC., TULLAHOMA, TENN. REPT. NO. ARO-ETF-TR-72-30. SEE ALSO PART 1, AD-744 048.

DESCRIPTORS: (*TURBOJET ENGINES, EXHAUST GASES), (*EXHAUST GASES, *AFTERBURNERS), (*AIR POLLUTION, EXHAUST GASES), (*GAS DETECTORS, EXHAUST GASES), AIRCRAFT ENGINES, CARBON MONOXIDE, CARBON DIOXIDE, NITROGEN OXIDES, HYDROCARBONS, MEASUREMENT, GAS ANALYSIS, HUMIDITY, WIND, DIFFUSION, CONCENTRATION(CHEMISTRY), INFRARED SPECTROSCOPY, ELECTROCHEMISTRY, GAS IONIZATION (U)
IDENTIFIERS: *AIRCRAFT EXHAUST, PLUMES, FLAME IONIZATION DETECTORS, J-85 ENGINES, J-85-GE-5 ENGINES (U)

THE PERFORMANCE OF A SAMPLING AND MEASUREMENT SYSTEM FOR THE GASEOUS SPECIES OF CARBON MONOXIDE (CO), CARBON DIOXIDE (CO2), TOTAL HYDROCARBONS (C(X)H(Y)), NITROGEN DIOXIDE (NO2), AND TOTAL OXIDES OF NITROGEN (NO(X)) WAS DEMONSTRATED FOR AN AFTERBURNING TURBOJET ENGINE POWER CONDITIONS FROM IDLE TO MAXIMUM AFTERBURNING AT GROUND LEVEL. DATA WERE OBTAINED, USING A PROTABLE EMISSIONS MEASUREMENT SYSTEM, AT POSITIONS RANGING FROM IMMEDIATELY AT THE NOZZLE EXIT TO 96 FT AFT OF THE NOZZLE EXIT PLANE. A J85-GE-5 ENGINE WAS USED TO GENERATE THE GASEOUS EMISSIONS. NONDISPERSIVE INFRARED DETECTORS WERE USED FOR CO AND CO2 MEASUREMENTS; A FLAME IONIZATION DETECTOR WAS USED FOR C(X)H(Y) MEASUREMENTS; AND ELECTROCHEMICAL DEVICES OPERATING ON THE FUEL CELL PRINCIPLE WERE USED FOR NO2 AND NO(X) MEASUREMENTS.

101 (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 747 885 13/2 21/2
NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC CITY N J

RELATIONSHIP BETWEEN THE SAE SMOKE NUMBER AND JET AIRCRAFT SMOKE VISIBILITY. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1970-1971,
DEC 71 24P SLUSHER, GERALD R. ;
REPT. NO. FAA-NA-71-25
PROJ: FAA-502-306-02X
MONITOR: FAA-RD 71-23

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*EXHAUST GASES, VISIBILITY), (*AIRCRAFT ENGINES, AIR POLLUTION), (*JET ENGINES, AIR POLLUTION), PARTICLES, LIGHT TRANSMISSION, SCATTERING, GAS TURBINES, DENSITY, MEASUREMENT (U)
IDENTIFIERS: *AIR POLLUTION DETECTION, *AIRCRAFT EXHAUST, PLUMES, *SMOKE NUMBER, SMOKE, *JET ENGINE EXHAUST (U)

A METHOD WAS DEVELOPED USING THE SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) SMOKE NUMBERS FOR CALCULATING THE EXHAUST SMOKE TRANSMISSION FOR TURBINE ENGINES, NUMBER OF PLUME PATHS, AND VIEWING ANGLES. CRITERIA WERE DEVELOPED RELATING THE SAE SMOKE NUMBER TO ENGINE AIRFLOW AND THUS TO ENGINE SIZE FOR CONDITIONS OF VISIBLE AND INVISIBLE SMOKE. TRANSMISSION OF MULTIPLE PLUMES WAS CALCULATED AND IS PRESENTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 748 080 13/2
EDGEWOOD ARSENAL MD

ENVIRONMENTAL INSTRUMENTATION CONFERENCE, U. S. ARMY MATERIEL COMMAND HELD AT EDGEWOOD ARSENAL, MARYLAND ON 28-29 MARCH 1972. (U)

DESCRIPTIVE NOTE: SPECIAL PUBLICATION,
JUL 72 68P HILSMEIER,ALLEN E. ;
REPT. NO. EA-SP-1800-5

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, DETECTORS), (*WATER POLLUTION, DETECTORS), MONITORS, GAS DETECTORS, SCIENTIFIC RESEARCH, CHEMICAL ANALYSIS, EXHAUST GASES, PARTICLES, MUNITIONS INDUSTRY, WASTES(INDUSTRIAL), CHEMICAL WARFARE AGENTS, SAMPLERS, SYMPOSIA (U)
IDENTIFIERS: *WATER POLLUTION DETECTION, WATER ANALYSIS, *AIR POLLUTION DETECTION, REMOTE SENSIN, JOINT PANEL AMMUNITION DISPOSAL, JPAD(JOINT PANEL AMMUNITION DISPOSAL) (U)

THE REPORT CONTAINS ABSTRACTS OF THE PRESENTATIONS GIVEN AT THE ENVIRONMENTAL INSTRUMENTATION CONFERENCE FOR THE ARMY MATERIEL COMMAND WHICH WAS HELD AT EDGEWOOD ARSENAL, MARYLAND ON 28 AND 29 MARCH 1972. THE MEETING HAD A TWOFOLD PURPOSE - TO PRESENT AN UP-TO-DATE ACCOUNT OF TECHNICAL INSTRUMENTS CURRENTLY USED IN MONITORING AND ANALYZING THE NATION'S AIR AND WATER AND TO EXCHANGE IDEAS ABOUT THE FUTURE REQUIREMENTS FOR SCIENTIFIC DEVELOPMENTS IN THE ARMY POLLUTION ABATEMENT PROGRAMS. REPRESENTATIVES FROM TWENTY AMC COMMANDS, AS WELL AS DELEGATES FROM THE OFFICE OF THE SURGEON GENERAL, THE ARMY CORPS OF ENGINEERS, AND THE ARMY ENVIRONMENTAL HYGIENE AGENCY PARTICIPATED IN THE TWO-DAY CONFERENCE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 748 797 4/1
AIR FORCE CAMBRIDGE RESEARCH LABS L G HANSCOM FIELD MASS

HOW DRY IS THE SKY. A DECADE LATER AND THE SST. (U)

DESCRIPTIVE NOTE: AIR FORCE SURVEYS IN GEOPHYSICS, APR 72 31P SISSENWINE,NORMAN ;KANTOR, ARTHUR J. ;GRANTHAM,DONALD D. ;
REPT. NO. AFCRL-AFSIG-240, AFCRL-72-0294
PROJ: AF-8624
TASK: 862401

UNCLASSIFIED REPORT

DESCRIPTORS: (*STRATOSPHERE, *WATER VAPOR), (*SUPERSONIC AIRCRAFT, AIR POLLUTION), (*AIR POLLUTION, EXHAUST GASES), HUMIDITY, CLOUDS, TRANSPORT AIRCRAFT, COMMERCIAL PLANES (U)
IDENTIFIERS: *AERONOMY, SUPERSONIC TRANSPORTS (U)

WATER VAPOR THAT WOULD BE ADDED TO THE STRATOSPHERE BY A POTENTIAL FLEET OF SSTS IS RELATED TO THE MOST ACCEPTED HUMIDITY BALANCE IN THE STRATOSPHERE BASED ON GENERAL CIRCULATION CONSIDERATIONS, AND TO MOISTURE INTRODUCED INTO THE STRATOSPHERE BY VAPORIZATION FROM CONVECTIVE CLOUDS. A MEAN RESIDENCE TIME OF 25 MONTHS FOR WATER VAPOR WAS CALCULATED FROM GENERAL CIRCULATION VALUES, ON THE ASSUMPTION THAT OTHER WATER VAPOR REACHING THE STRATOSPHERE WAS AN EQUAL TIME OF RESIDENCE, A FLEET OF SSTS WOULD INCREASE HUMIDITY BY 0.5 PPM OR 25 PERCENT OF THE GENERALLY ACCEPTED 2 PPM EQUILIBRIUM VALUE. VAPORIZATION OF ONLY 1 PERCENT OF THE CONVECTIVE CLOUD MASS, CALCULATED HEREIN TO ENTER THE STRATOSPHERE, WOULD INCREASE ITS MIXING RATIO BY 1 PPM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 748 884 7/1 13/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

EXTREME PURIFICATION OF EXHAUST GASES TO REMOVE OXIDES OF NITROGEN, (U)

MAY 72 11P PICCHELAURI,EVGENII N. ; KOBOTSEV,NIKOLAI I. ;MAEVSKAYA,EKATERINA S. ; EMELYANOV,YURII M. ;GALANIN,IVAN I. ;
REPT. NO. FTD-HC-23-380-72
PROJ: AF-G101

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF PATENT (GERMANY) 19 258 71 P1-12 1970.

DESCRIPTORS: (*NITROGEN OXIDES, *DECOMPOSITION), (*AIR POLLUTION, NITROGEN OXIDES), OZONE, PURIFICATION, ADSORPTION, CATALYSTS, WASTES(INDUSTRIAL), PATENTS, WEST GERMANY (U)
IDENTIFIERS: *OZONIZATION, *AIR POLLUTION, *CONTROL, *GAS PURIFICATION, TRANSLATIONS (U)

A PROCESS FOR EXTREME PURIFICATION OF GASES FROM OXIDES OF NITROGEN IS DESCRIBED. THE GAS, WHICH CONTAINS OXIDES OF NITROGEN, IS OXIDIZED BY EXCESS OZONE OR A MIXTURE OF OZONE AND OXYGEN OR AIR. THIS FORMS NITROGEN PENTOXIDE WHICH IS REMOVED BY AQUEOUS ADSORPTION. ANY EXCESS OZONE IS REMOVED BY ADSORPTION OR CATALYSIS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 749 195 7/4 13/2
CALIFORNIA UNIV LOS ANGELES DEPT OF CHEMISTRY

UNSEPARATED RARE EARTH COBALT OXIDES AS AUTO EXHAUST CATALYSTS, (U)

APR 72 2P PEDERSEN,LEE A. ;LIBBY,W. F. ;

REPT. NO. CONTRIB-2963
CONTRACT: AF-AFOSR-2019-71, NGL-05-007-003
PROJ: AF-9538
MONITOR: AFOSR TR-72-1817

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN SCIENCE, V176 P1355-1356, 23 JUN 72.

DESCRIPTORS: (*CATALYSTS, *RARE EARTH ELEMENTS), (*EXHAUST GASES, *OXIDATION), OXIDES, TEST METHODS, ALKENES, IMPURITIES, AIR POLLUTION, COBALT COMPOUNDS, LANTHANUM COMPOUNDS (U)
IDENTIFIERS: *AIR POLLUTION, *CONTROL, *AUTOMOBILE EXHAUST, COBALT OXIDES (U)

SINCE MEADOWCRAFT REPORTED THAT STRONTIUM-DOPED LACOO3 WAS COMPARABLE TO PLATINUM AS AN OXYGEN ELECTRODE, THE TESTING OF THE CATALYTIC ACTIVITY OF LACOO3 ON CERTAIN GAS SYSTEMS HAS BEEN PURSUED. THIS PARTICULAR RARE EARTH COBALT OXIDE AGAIN HAD ACTIVITY WHICH RIVALED PLATINUM. THE COMPOUND WAS SUGGESTED AS A CANDIDATE FOR AUTO EXHAUST CATALYSIS. AS A NEXT STEP, COBALT OXIDES WITH OTHER RARE EARTHS HAVE BEEN PREPARED, AND THEIR CATALYTIC ACTIVITIES HAVE BEEN PREPARED. LITTLE DIFFERENCE BETWEEN THEM HAS BEEN FOUND. THIS RESULT SUGGESTED THAT A CATALYST, JUST AS EFFECTIVE, COULD BE MADE FROM THE UNSEPARATED RARE EARTHS WITH SUBSTANTIAL COST SAVINGS. TESTS WITH THE RARE EARTH MIXTURE AS MINED DID GIVE EQUALLY SATISFACTORY RESULTS. (U)
(AUTHOR)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 749 457 13/2
ILLINOIS UNIV URBANA DEPT OF MECHANICAL AND INDUSTRIAL ENGINEERING

PREDICTION OF EXHAUST EMISSIONS FROM PRIME MOVERS AND SMALL HEATING PLANT FURNACES. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
JUL 72 109P SORENSON,SPENCER C. ;STUKEL, JAMES J. ;HULL,WILLIAM L. ;
CONTRACT: DACA23-70-C-0080
MONITOR: CERL TR-E-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *EXHAUST GASES), (*COMBUSTION PRODUCTS, AIR POLLUTION, *GAS TURBINES, EXHAUST GASES), (*SPARK IGNITION ENGINES, EXHAUST GASES), (*DIESEL ENGINES, EXHAUST GASES), (*FURNACES, COMBUSTION PRODUCTS), PREDICTIONS, PARTICLES, NITROGEN OXIDES, SULFUR COMPOUNDS, HYDROCARBONS, CORRELATION TECHNIQUES, CARBON DIOXIDE, MATHEMATICAL ANALYSIS, OXIDES, CARBON MONOXIDE (U)
IDENTIFIERS: SMOKE NUMBER, SULFUR DIOXIDE, *EMISSION (U)

THE REPORT IS THE RESULT OF AN INVESTIGATION OF THE POSSIBILITIES OF PREDICTING THE EXHAUST EMISSIONS FROM VARIOUS TYPES OF ENGINES AND SMALL HEATING PLANT FURNACES. THE ENGINES INVESTIGATED INCLUDE SPARK IGNITION ENGINES, COMPRESSION IGNITION ENGINES, AND GAS TURBINES. BASED ON A SURVEY OF CURRENTLY AVAILABLE LITERATURE AND DATA, IT WAS DETERMINED THAT CARBON MONOXIDE AND OXIDES OF NITROGEN CORRELATE REASONABLY WELL WITH BASIC ENGINE VARIABLES FOR SPARK IGNITION AND COMPRESSION IGNITION ENGINES. HYDROCARBON EMISSIONS IN THESE ENGINES DO NOT CORRELATE WELL, EVEN THOUGH SOME CONSISTENT EFFECTS OF VARIABLES WERE FOUND FOR SPARK IGNITION ENGINES. RECENT CORRELATIONS OF VARIOUS SMOKE MEASURING DEVICES ARE PRESENTED. CORRELATION RELATING EMISSIONS OF SULFUR DIOXIDE AND TOTAL OXIDES OF NITROGEN FOR SMALL HEATING PLANT FURNACES WITH THE GROSS HEAT INPUT FOR OIL-, COAL-, AND GAS-FIRED UNITS WERE ESTABLISHED. IN ADDITION, EQUATIONS USED TO CALCULATE THEORETICAL CARBON DIOXIDE EMISSIONS FOR GASEOUS, LIQUID, AND SOLID FUELS ARE PRESENTED. EMISSION FACTORS FOR THESE POLLUTANTS ARE PRESENTED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 751 295 4/1 13/2
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA JASON DIV

STRATOSPHERIC NITRIC OXIDE PRODUCTION FROM PAST NUCLEAR EXPLOSIONS AND ITS RELEVANCE TO PROJECTED SST POLLUTION, (U)

AUG 72 33P FOLEY,H. M. ;RUDERMAN,M. A. ;
REPT. NO. P-894
MONITOR: IDA-HQ 72-14452

UNCLASSIFIED REPORT

DESCRIPTORS: (*STRATOSPHERE, *NITROGEN OXIDES), (*SUPERSONIC AIRCRAFT, NITROGEN OXIDES), (*NUCLEAR EXPLOSIONS, STRATOSPHERE), (*EXHAUST GASES, SUPERSONIC AIRCRAFT), (*OZONE, STRATOSPHERE), AIR POLLUTION, CONCENTRATION(CHEMISTRY), GAS IONIZATION, CATALYSTS (U)
IDENTIFIERS: NITROGEN OXIDE(NO), *AERONOMY (U)

IT IS SHOWN THAT DURING CERTAIN YEARS OF INTENSE NUCLEAR TESTING, HIGH-YIELD NUCLEAR EXPLOSIONS SEEM TO HAVE INJECTED INTO THE STRATOSPHERE A FEW TIMES 10 TO THE 34TH POWER NITRIC OXIDE MOLECULES. THIS IS VERY SIMILAR TO UPPER ESTIMATES FOR NO GENERATION FROM 500 SSTS FLYING FOR A YEAR. LARGE CATALYTIC OZONE REDUCTION FROM SUCH NO INJECTION WAS NOT OBSERVED IN WORLDWIDE OR LOCAL TOTAL OZONE MEASUREMENTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 751 439 13/2 6/20
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB OHIO

NEW FEDERAL AIR QUALITY STANDARDS, (U)

DEC 71 23P STOPINSKI,ORIN W. ;
REPT. NO. AMRL-TR-71-120-PAPER-17
PROJ: AF-6302

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE ANNUAL CONFERENCE ON ENVIRONMENTAL TOXICOLOGY (2ND), FAIRBORN, OHIO, 31 AUG, 1-2 SEP 71, SPONSORED BY THE SYSTEMED CORP., DAYTON, OHIO. SEE ALSO AD-751 438 AND AD-751 440.

DESCRIPTORS: (*AIR POLLUTION, STANDARDS), (*TOXICITY, AIR POLLUTION), (*PUBLIC HEALTH, AIR POLLUTION), LAW, NITROGEN OXIDES, SULFUR COMPOUNDS, HYDROCARBONS, OXIDIZERS, CARBON MONOXIDE, PARTICLES, MONITORS, EXPOSURE(PHYSIOLOGY) (U)
IDENTIFIERS: LEGISLATION, NITROGEN OXIDE(NO2), AIR POLLUTION EFFECTS(ANIMALS), *AIR POLLUTION STANDARDS, GOVERNMENT POLICIES, SULFUR DIOXID, JOINT PANEL AMMUNITION DISPOSAL, JPAD(JOINT PANEL AMMUNITION DISPOSAL) (U)

THE REPORT DISCUSSES THE CURRENT PROCEDURES FOR ESTABLISHING AIR QUALITY STANDARDS, THE BASES FOR STANDARDS, AND, FINALLY, PROPOSED AND FINAL NATIONAL PRIMARY AND SECONDARY AMBIENT AIR QUALITY STANDARDS FOR SULFUR DIOXIDE, PARTICULATE MATTER, CARBON MONOXIDE, NONMETHANE HYDROCARBONS, PHOTOCHEMICAL OXIDANTS, AND NITROGEN DIOXIDE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 751 890 13/2
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

INITIAL AMBIENT AIR QUALITY SURVEY. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
OCT 68 28P DIAMOND,PHILIP ;LANDES,
RICHARD L. ;
REPT. NO. EHL-M-68M-52
PROJ: EHL-67-M-36

UNCLASSIFIED REPORT

DESCRIPTORS: (*MILITARY FACILITIES, *AIR POLLUTION), (*EXHAUST GASES, AIR POLLUTION), CALIFORNIA, MONITORS, JET AIRCRAFT, OXIDIZERS, HYDROCARBONS, PARTICLES, MANPOWER, AIR FORCE (U)
IDENTIFIERS: MCCLELLAN AIR FORCE BASE, MILITARY AIR FACILITIES, AIR QUALITY DATA, AIRCRAFT EXHAUST (U)

THE AMBIENT AIR QUALITY AT MCCLELLAN AIR FORCE BASE, SACRAMENTO COUNTY, CALIFORNIA, WAS MONITORED TO DETERMINE IF THE EXHAUST EMISSIONS FROM JET AIRCRAFT AND ASSOCIATED INDUSTRIAL OPERATIONS IN THE AREA WOULD PRODUCE SIGNIFICANTLY HIGHER POLLUTION LEVELS THAN THOSE SHOWN BY THE SACRAMENTO COUNTY AIR POLLUTION DIVISION COMMUNITY DATA OVER THE SAME PERIOD, THE APPLICABILITY OF SPECIFIC EQUIPMENT AND METHODS THAT MIGHT BE USED FOR AMBIENT AIR QUALITY STUDIES, AND THE MANPOWER REQUIREMENTS TO CONDUCT THIS TYPE OF MONITORING PROGRAM. THE RESULTS OF THE STUDY SHOWED THE LEVELS OF POLLUTANTS MEASURED AT THE MCCLELLAN SAMPLING STATION WERE LOWER THAN THE POLLUTANT LEVELS RECORDED AT THE SACRAMENTO COUNTY SAMPLING STATIONS. CONCLUSIONS ARE PRESENTED FOR THE FUTURE TYPE OF AIR POLLUTION RESEARCH AND MONITORING THAT AIR FORCE FACILITIES SHOULD UNDERTAKE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 768 144 7/1 13/2
ARMY MATERIEL COMMAND TEXARKANA TEX INTERN TRAINING CENTER

HYDROCARBON RECOVERY FROM AUTOMOTIVE EXHAUST, (U)

JUL 71 64P HAYS,GILBERT A. ;
REPT. NO. USAMC-ITC-2-71-05

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTERNAL COMBUSTION ENGINES, EXHAUST GASES), (*EXHAUST GASES, *PASSENGER VEHICLES), (*AIR POLLUTION, INTERNAL COMBUSTION ENGINES), CATALYSTS, NITROGEN OXIDES, CARBON MONOXIDE, RECOVERY (U)
IDENTIFIERS: *AIR POLLUTION CONTROL EQUIPMENT, SPARK IGNITION ENGINES, *AUTOMOBILE EXHAUST, CATALYTIC REACTORS(EXHAUST SYSTEMS) (U)

THE PAPER IS CONCERNED WITH THE AIR POLLUTION PROBLEM AS IT RELATES TO THE OTTO-CYCLE ENGINE AND THE VEHICLES POWERED BY THIS TYPE ENGINE. SPECIFICALLY, THIS PAPER DEALS WITH THE CONTROL OF THE THREE MAJOR AIR POLLUTANTS EMITTED BY THE AUTOMOBILE. IT DISCUSSES THE AUTOMOBILE AS A SOURCE OF POLLUTION AND THE EFFORTS THAT HAVE BEEN AND ARE BEING MADE TO CONTROL THE EMISSION OF POLLUTANTS. THE AUTHOR PROPOSES A NEW EXHAUST CONTROL SYSTEM THAT IS BASED ON VIEWING THE POLLUTION PROBLEM AS A WASTED RESOURCE PROBLEM AND DISCUSSES THE POSSIBLE DIFFICULTIES THAT THE PROPOSED CONTROL SYSTEM WILL ENCOUNTER. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 768 287 21/5 13/2 7/1
BRAUN (C F) AND CO ALHAMBRA CALIF

TURBOJET AIRCRAFT ENGINE TEST CELL POLLUTION ABATEMENT STUDY. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUL-DEC 72, JUN 73 93P DAVIES,GEORGE F. ;CROW, RICHARD H. ;
CONTRACT: N62399-72-C-0020
PROJ: YF38.554
TASK: YF38.554.001
MONITOR: NCEL CR-74.001

UNCLASSIFIED REPORT

DESCRIPTORS: (*TURBOJET ENGINES, *AIR POLLUTION), (*EXHAUST GASES, TURBOJET ENGINES), PARTICLES, CARBON MONOXIDE, NITROGEN OXIDES, HYDROCARBONS, ALDEHYDES, INCINERATORS, FLUID FILTERS, ELECTROSTATIC PRECIPITATION, SEPARATION, TEST FACILITIES (U)
IDENTIFIERS: *AIR POLLUTION CONTROL EQUIPMENT, J-79 ENGINES, PERFORMANCE EVALUATION, SCRUBBERS, WET METHODS, DRY METHODS, CYCLONE SEPARATORS, VENTURI SEPARATORS, PACKED TOWER SCRUBBERS (U)

THE REPORT SUMMARIZES THE RESULTS OF A SURVEY AND ANALYSIS OF THE APPLICATION OF CONVENTIONAL AIR POLLUTANT ABATEMENT SYSTEMS TO THE EXHAUST GAS FROM JET ENGINE TEST CELLS. THE FOLLOWING METHODS FOR GAS TREATMENT WERE INVESTIGATED: WET SCRUBBERS, INCINERATORS, ELECTROSTATIC PRECIPITATORS, FILTERS, DRY INERTIAL COLLECTORS. THE LEAST COSTLY METHODS FOR MEETING PRESENT EMISSION STANDARDS ARE WATER SCRUBBING SYSTEMS. ONE OF THE MOST ATTRACTIVE OF WET SCRUBBERS USING KOCH FLEXITRAYS IS DEVELOPED IN DETAIL. THE REPORT COVERS THE ASSOCIATED PROBLEM OF WATER SUPPLY AND DISPOSAL. THE REPORT ALSO INCLUDES RESEARCH AND DEVELOPMENT SUGGESTIONS FOR TEST CELL EMISSION CONTROL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 768 351 21/5 14/2 21/2
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF ENGINEERING

THE THEORY OF AN ELECTROSTATIC METAL-PARTICLE SENSOR OPERATING IN A JET ENGINE EXHAUST. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
JUN 73 73P LABO,JACK ALLEN ;
REPT. NO. GEP/PH/73-13

UNCLASSIFIED REPORT

DESCRIPTORS: (*PROBES(ELECTROMAGNETIC), RELIABILITY(ELECTRONICS)), (*JET ENGINES, EXHAUST GASES), (*EXHAUST GASES, PROBES(ELECTROMAGNETIC)), PARTICLE SIZE, ELECTROSTATIC FIELDS, PLASMA SHEATHS, CHARGED PARTICLES, THESES (U)

AN ELECTROSTATIC PROBE IS STUDIED AS A CHARGED METAL PARTICLE DETECTOR IN A JET ENGINE EXHAUST FROM BOTH A THEORETICAL AND EXPERIMENTAL STANDPOINT. THE THEORETICAL DEVELOPMENT CONCENTRATED ON THE ELECTROSTATIC PARTICLE-PROBE INTERACTION PROBLEM. THE MECHANISM BY WHICH A MOVING CHARGED PARTICLE INDUCES A VOLTAGE PULSE IN A PROBE SENSING CIRCUIT IS STUDIED AND A PRACTICAL MODEL FOR THE PARTICLE-PROBE SYSTEM IS DEVELOPED AND THE RESULTING VOLTAGE PULSES ARE EXPLAINED BY MEANS OF A CAPACITIVE EQUIVALENT ELECTRICAL CIRCUIT. IN ORDER TO PREDICT THE VOLTAGE PULSE WAVEFORM, THE CHANGING CAPACITANCE BETWEEN A MOVING CHARGED PARTICLE AND AN ELECTROSTATIC PROBE IS DETERMINED, AND THE PREDICTED VOLTAGE PULSE IS FOUND TO DEPEND UPON THE PARTICLE CHARGE AND THE PROBE SENSING CIRCUIT. THE INTERACTION OF AN UNCHARGED PARTICLE WITH A BIASED PROBE AND THE JET ENGINE EXHAUST PLASMA EFFECTS ARE BRIEFLY DISCUSSED. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 769 099 21/5 21/4 13/2
PHILLIPS PETROLEUM CO BARTLESVILLE OKLA RESEARCH AND DEVELOPMENT DEPT

REDUCTION OF POLLUTANTS FROM AIRCRAFT TURBINE BY FUEL SELECTION AND PREVAPORIZATION. (U)

DESCRIPTIVE NOTE: FINAL REPT. 14 SEP 72-14 JUN 73,
OCT 73 183P QUIGG,H. T. ;
REPT. NO. 6607-73
CONTRACT: N00140-72-C-6969

UNCLASSIFIED REPORT

DESCRIPTORS: (*GAS TURBINES, *EXHAUST GASES), (*AVIATION FUELS, EXHAUST GASES), (*AIR POLLUTION, GAS TURBINES), HYDROCARBONS, AROMATIC COMPOUNDS, ALKANES, HUMIDITY, SMOKE, FLAMES, VAPORIZATION, OPERATION, CARBON MONOXIDE (U)
IDENTIFIERS: VOLATILITY, RADIANCE, JP-5 FUEL (U)

AN INVESTIGATION WAS CONDUCTED, USING THE PHILLIPS 2-INCH COMBUSTOR OPERATING UNDER CONDITIONS SIMULATING THOSE IN MODERN AIRCRAFT TURBINE ENGINES, TO PROVIDE INFORMATION ON THE EFFECTS OF HYDROCARBON TYPE AND FUEL VOLATILITY ON FLAME RADIANCE AND EXHAUST EMISSIONS. FUELS USED IN THE INVESTIGATION WERE A JP-5 FOR REFERENCE AND TEN PURE HYDROCARBONS (NORMAL, ISO-, AND CYCLOPARAFFINS AND AROMATICS) WITH VARIOUS BOILING POINTS WITHIN EACH HYDROCARBON TYPE. HYDROGEN CONTENT OF THE FUELS RANGED FROM 7.7 TO 16.4 WEIGHT PER CENT. THE EFFECTS OF DIFFERENCES IN PHYSICAL PROPERTIES OF THE FUELS WERE MINIMIZED BY PREVAPORIZATION BEFORE INTRODUCTION TO THE COMBUSTOR AND MAXIMIZED BY USING PRESSURE ATOMIZATION FOR INJECTION OF FUEL TO THE COMBUSTOR. INLET AIR HUMIDITY WAS INCLUDED AS AN OPERATING VARIABLE. EMPIRICAL EQUATIONS, BASED ON FUEL AND OPERATING VARIABLES WERE DEVELOPED FOR PREDICTION OF FLAME RADIANCE, NO, NOX, CO, AND SMOKE. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 769 278 13/2 4/1
ADVISORY GROUP FOR AERONAUTICAL RESEARCH AND DEVELOPMENT
PARIS (FRANCE)

ATMOSPHERIC POLLUTION BY AIRCRAFT
ENGINES. (U)

DESCRIPTIVE NOTE: CONFERENCE PROCEEDINGS,
SEP 73 399P
REPT. NO. AGARD-CP-125

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT MEETING OF THE AGARD PROPULSION AND ENERGETICS PANEL (41ST) LONDON, 9-13 APR 73. NATO FURNISHED.

DESCRIPTORS: (*AIR POLLUTION, *AIRCRAFT), MEETINGS, NITROGEN OXIDES, OZONE, STRATOSPHERE, REACTION KINETICS, SUPERSONIC TRANSPORTS, AIRPORTS, EXHAUST GASES, COMBUSTION CHAMBERS, GAS TURBINES (U)
IDENTIFIERS: AIR POLLUTION CONTROL EQUIPMENT, AIR POLLUTION ABATEMENT (U)

AS PART OF THE GROWING CONCERN IN MANY DEVELOPED COUNTRIES WITH QUESTIONS OF ECOLOGY AND ENVIRONMENT, AIRCRAFT ARE BEING HEAVILY CRITICIZED AS CONTRIBUTING A SIGNIFICANT SHARE OF POLLUTION. ALTHOUGH THE MAJOR OBJECTION IS TO NOISE, OBJECTIONS ARE ALSO RAISED CONCERNING SMOKE, FUMES, AND SMELLS ASCRIBED TO AIRCRAFT. AS A RESULT, WORK IS IN PROGRESS TO ASSESS THE IMPACT OF MILITARY AND CIVIL AVIATION ON POLLUTION LEVELS BY DETERMINING THE NATURE AND QUANTIFYING THE EXTENT OF AIRCRAFT PRODUCED POLLUTION FOR COMPARISON WITH POLLUTION FROM OTHER SOURCES. THE MAIN AREAS OF INTEREST INVOLVED IN THE MEETING WERE: EFFECTS OF POLLUTION AT VERY HIGH ALTITUDES; EFFECTS OF POLLUTION NEAR AIRPORTS; METHODS FOR REDUCTION OF POLLUTANT PRODUCTION IN COMBUSTION PROCESSES AND IN ENGINES. THEREFORE, THE MEETING COVERED BOTH THE PROBLEM OF POLLUTION GENERATION, ESPECIALLY RELATED TO NITRIC OXIDE, AND THE PROBLEM OF DIFFUSION. IN ADDITION IT DISCUSSED SOME OF THE EFFECTS OF THE PRODUCTION OF POLLUTANTS IN THE ATMOSPHERE. THE MEETING INCLUDED A REVIEW OF PHYSIOLOGICAL EFFECTS DUE TO POLLUTANTS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 769 291 13/2
SCOTT RESEARCH LABS INC PLUMSTEADVILLE PA

A STUDY OF STACK EMISSIONS FROM COAST GUARD CUTTERS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
SEP 73 164P SOUZA,ANTHONY F. ;
CONTRACT: DOT-TSC-429
MONITOR: USCG,TSC D-13-73,USCG-73-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXHAUST EMISSIONS, *BOATS), (*COAST GUARD RESEARCH, EXHAUST EMISSIONS), (*AIR POLLUTION, BOATS), POLLUTANTS, HYDROCARBONS, DIESEL ENGINES, CARBON MONOXIDE, CARBON DIOXIDE, PARTICULATES, SMOKE, NITROGEN OXIDES, COMPUTER PROGRAMMING, SAMPLING (U)
IDENTIFIERS: COAST GUARD CUTTERS (U)

THE GASEOUS AND PARTICULATE EMISSIONS FROM 14 CUTTERS AND BOATS IN THE FIRST COAST GURRD DISTRICT HAVE BEEN MEASURED UNDER TYPICAL OPERATING CONDITIONS. THESE MEASUREMENTS WERE PERFORMED ON 57 DIESEL ENGINES AND BOILERS CONFIGURED AS MAIN PROPULSION UNITS, SHIP-SERVICE GENERATORS AND HOTEL-SERVICE BOILERS. THE DIESEL ENGINES VARIED IN SIZE FROM TWO-CYLINDER, NATURALLY ASPIRATED, 35 H.P. UNITS TO 3600 H.P. TURBO-CHARGED UNITS. THE GASEOUS EMISSION CONCENTRATIONS MEASURED WERE CARBON MONOXIDE, CARBON DIOXIDE, TOTAL HYDROCARBONS, AND OXIDES OF NITROGEN. PARTICULATE EMISSION RATES BY GRAVIMETRIC TECHNIQUE AS WELL AS SMOKE LEVELS WERE ALSO DOCUMENTED. THESE MEASURED CONCENTRATIONS WERE REDUCED TO MASS EMISSION NOTES BY APPROPRIATE COMPUTER PROGRAMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 769 455 13/2
TRANSPORTATION SYSTEMS CENTER CAMBRIDGE MASS

U.S. COAST GUARD POLLUTION ABATEMENT PROGRAM: A PRELIMINARY REPORT ON THE EMISSIONS TESTING OF BOAT DIESEL ENGINES. (U)

DESCRIPTIVE NOTE: INTERIM REPT.,
NOV 73 40P WALTER,ROBERT A. ;
REPT. NO. TSC-USCG-73-2
MONITOR: USCG D-21-74

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIESEL ENGINES, *EXHAUST GASES), (*MARINE ENGINES, *AIR POLLUTION), CARBON MONOXIDE, CARBON DIOXIDE, HYDROCARBONS, NITROGEN OXIDES, SMOKE, OXYGEN, AIR POLLUTION, GAS ANALYSIS, COAST GUARD RESEARCH, TABLES(DATA), DYNAMOMETERS, DYNAMIC TESTING (U)

THE EXHAUST EMISSION CONCENTRATIONS FROM THREE GM6-71'S AND A CUMMINS VT-350 DIESEL ENGINES WERE MEASURED ON A DYNAMOMETER AS A FUNCTION OF ENGINE LOAD. THE GM6-71 ENGINES WERE NEWLY REBUILT BY THE COAST GUARD; THE CUMMINS ENGINE WAS IN USED CONDITION. THESE ENGINES ARE USED AS MAIN POWER UNITS IN COAST GUARD BOATS. THE EXHAUST EMISSION CONCENTRATIONS WERE REDUCED TO MASS EMISSIONS BY THE CARBON BALANCE TECHNIQUE. SIMILAR EMISSION LEVELS WERE OBTAINED FROM THE THREE REBUILT GM6-71 ENGINES WITH TYPE HV INJECTORS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 769 482 13/2
AIR FORCE WEAPONS LAB KIRTLAND AFB N MEX

UNITED STATES AIR FORCE AIRCRAFT POLLUTION EMISSIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JAN-13 JUL 73,
NOV 73 51P NAUGLE,DENNIS F. ;DELANEY, BERNARD T. ;
REPT. NO. AFWL-TR-73-199

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIRCRAFT ENGINES, *AIR POLLUTION), (*JET ENGINES, AIR POLLUTION), MILITARY AIRCRAFT, AIR FORCE EQUIPMENT, TEST METHODS, EXHAUST GASES, NITROGEN OXIDES, CARBON MONOXIDE, PARTICULATES, HYDROCARBONS, TABLES(DATA) (U)

THE INTEREST IN POLLUTION EMISSIONS FROM AIRCRAFT HAS BEEN ENHANCED BY ENVIRONMENTAL PROTECTION AGENCY'S RECENT DETERMINATION THAT MAJOR CIVILIAN AIRPORTS ARE SIGNIFICANT CONTRIBUTORS TO LOCALIZED AIR-QUALITY DEGRADATION. THIS REPORT SUMMARIZES THE USAF AIRCRAFT AND ENGINES IN COMMON USE, PRESENTS NORMALIZED ENGINE POLLUTION EMISSION FACTORS (EMISSION INDICES), REVIEWS DEFICIENCIES IN PRESENT EMISSION DATA, AND RECOMMENDS FUTURE EFFORTS TO BETTER ANALYZE AIRCRAFT EMISSIONS. PRIMARY GOALS OF IMPACT ASSESSMENTS AT MANY LOCATIONS AND TO STIMULATE COMMENT ON THE DIRECTION OF FUTURE USAF EFFORTS CONCERNING THE RECOMMENDED PROJECTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 769 655 13/2
OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)

ATMOSPHERIC POLLUTION BY AIRCRAFT ENGINES. (U)

DESCRIPTIVE NOTE: CONFERENCE REPT.,
AUG 73 23P MELLOR,A. M. ;ROBERTS, RALPH ;
REPT. NO. ONRL-C-17-73

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIRCRAFT ENGINES, *AIR POLLUTION), EXHAUST GASES, MEETINGS, NITROGEN OXIDES, UPPER ATMOSPHERE, REACTION KINETICS, PHOTOCHEMICAL REACTIONS, CHEMICAL REACTIONS, GAS TURBINES, CARBON MONOXIDE, HYDROCARBONS, OZONE, TEST METHODS, GREAT BRITAIN (U)
IDENTIFIERS: *AIR POLLUTION CONTROL (U)

THE REPORT SUMMARIZES PAPERS DELIVERED AT A MEETING ON THE EFFECT OF CHEMICAL AIR POLLUTION BY AIRCRAFT AT VERY HIGH ALTITUDES AND NEAR AIRPORTS. ALSO DISCUSSED ARE ENGINEERING TECHNIQUES FOR REDUCING POLLUTANT PRODUCTION IN COMBUSTION IN AIRCRAFT ENGINES. BOTH THE PROBLEMS OF POLLUTION GENERATION AS WELL AS DIFFUSION WERE DISCUSSED. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 770 016 13/2 4/1 4/2
AIR FORCE CAMBRIDGE RESEARCH LABS L G HANSCOM FIELD MASS

ENVIRONMENTAL IMPACT OF B-1 EMISSIONS IN THE STRATOSPHERE. (U)

DESCRIPTIVE NOTE: AIR FORCE SURVEYS IN GEOPHYSICS, OCT 73 35P STERGIS,C. G. ;
REPT. NO. AFCRL-AFSG-275, AFCRL-TR-73-0608
PROJ: AF-8605
TASK: 860508

UNCLASSIFIED REPORT

DESCRIPTORS: (*JET BOMBERS, *EXHAUST GASES), (*AIR POLLUTION, JET BOMBERS), (*STRATOSPHERE, AIR POLLUTION), NITROGEN OXIDES, HYDROCARBONS, OZONE, CHEMICAL REACTIONS, PHOTOCHEMICAL REACTIONS, CATALYSIS, ULTRAVIOLET RADIATION, PARTICULATES, CARBON MONOXIDE, CARBON DIOXIDE, SULFUR OXIDES, ABSORPTION(PHYSICAL), CLIMATE, INFRARED RADIATION, WEATHER MODIFICATION (U)
IDENTIFIERS: B-1 AIRCRAFT (U)

THIS IS A COMPENDIUM OF THREE PAPERS AIMED AT THE QUESTION 'WHAT WILL BE THE ENVIRONMENTAL IMPACT OF A FLEET OF B-1 AIRCRAFT FLYING IN THE STRATOSPHERE.' THE THREE PAPERS ARE: (1) EFFECTS OF THE B-1 ON OZONE AND ON TRANSMITTED UV; (2) VISIBLE AND INFRARED EFFECTS OF MOLECULAR AND PARTICULATE B-1 EMISSIONS; AND (3) ASSESSMENT OF THE IMPACT OF THE B-1 EXHAUST EMISSIONS ON LOCAL AND GLOBAL CHANGES IN WEATHER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 771 710 13/3
DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA

ENVIRONMENTAL POLLUTION: AIR POLLUTION - EXHAUST GASES. (U)

DESCRIPTIVE NOTE: REPORT BIBLIOGRAPHY JAN 71-JUL 73.
DEC 73 94P
REPT. NO. DDC-TAS-73-77

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *EXHAUST GASES, *BIBLIOGRAPHIES, ABATEMENT, CARBON MONOXIDE, NITROGEN OXIDES, HYDROCARBONS, WASTE GASES, PASSENGER VEHICLES, AIRCRAFT, SUPERSONIC TRANSPORTS, JET ENGINES, TURBOJET ENGINES, AIRCRAFT ENGINES, JET ENGINES, INTERNAL COMBUSTION ENGINES, GAS DETECTORS, AVIATION FUELS, FUEL ADDITIVES, JET ENGINE FUELS, TOXICITY (U)

THE BIBLIOGRAPHY COMPRISES CITATIONS OF UNCLASSIFIED REPORTS DEALING WITH EXHAUST GASES IN A SERIES OF BIBLIOGRAPHIES ON AIR POLLUTION. TOPICS DISCUSSED INCLUDE AIR POLLUTION FROM EXHAUST GASES EMANATING FROM GROUND AND AIR TRANSPORTATION. THERE ARE ALSO INCLUDED SOME REFERENCES TO EXHAUST SYSTEMS OF JET ENGINES, HELICOPTERS, TURBOJET ENGINES, AND ROCKET MOTORS. CORPORATE AUTHOR-MONITORING AGENCY, SUBJECT, TITLE, PERSONAL AUTHOR, CONTRACT, AND REPORT NUMBER INDEXES ARE INCLUDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 773 717 7/4 13/2
FRANKLIN INST RESEARCH LABS PHILADELPHIA PA

DETECTION OF VEHICLE EXHAUST/PETROLEUM VAPORS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
MAR 71 37P SCHAFER,MARGARET ;
REPT. NO. FIRL-F-C2200-32
CONTRACT: DAAD05-68-C-0283
PROJ: LWL-05-PA-70
MONITOR: LWL CR-05PA70

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *HYDROCARBONS, INFRARED SPECTROSCOPY, GAS ANALYSIS, SULFUR OXIDES, NITROGEN OXIDES, CARBON MONOXIDE, CARBON DIOXIDE, MASS SPECTROSCOPY, FLAMES, DETECTORS, IONIZATION, SPECTROMETERS, EXHAUST GASES, REVIEWS (U)
IDENTIFIERS: SULFUR DIOXIDE, *AIR POLLUTION DETECTION, FLAME IONIZATION DETECTORS (U)

THE REPORT DESCRIBES THE RESULTS OF A LITERATURE SEARCH AND INVESTIGATION TO DETERMINE (A) THE TRACE QUANTITIES OF VEHICLE EXHAUST PRODUCTS (INCLUDING FUEL ADDITIVES) PRESENT IN THE ATMOSPHERE NEAR VEHICLES AND (B) HYDROCARBON AND PETROLEUM VAPORS IN THE ATMOSPHERE DUE TO ANY SOURCE. THE OBJECT OF THE STUDY WAS TO DETERMINE SPECIFIC COMPOUNDS PRESENT, THE QUANTITIES PRESENT, TECHNIQUES FOR DETECTING THESE TRACE COMPOUNDS AND EQUIPMENT PRESENTLY COMMERCIALLY AVAILABLE FOR THIS PURPOSE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 773 766 6/20
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB OHIO

PROCEEDINGS OF THE ANNUAL CONFERENCE ON ENVIRONMENTAL TOXICOLOGY (3RD) HELD IN FAIRBORN, OHIO, ON 25-27 OCTOBER 1972, (U)

DEC 72 356P
REPT. NO. AMRL-TR-72-130
PROJ: AF-6302
TASK: 630201

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO ANNUAL CONFERENCE NO. 2, AD-746 660.

DESCRIPTORS: *TOXICITY, *SYMPOSIA, *HALOGENATED HYDROCARBONS, *AIR POLLUTION, *PROPELLANTS, FIRE EXTINGUISHING AGENTS, EXPOSURE(PHYSIOLOGY), PATHOLOGY, ELECTRON MICROSCOPY, GAS CHROMATOGRAPHY (U)

THE REPORT IS A COMPILATION OF THE PAPERS PRESENTED AT THE PROCEEDINGS OF THE 3RD ANNUAL CONFERENCE ON ENVIRONMENTAL TOXICOLOGY, SPONSORED BY THE SYSTEMED CORPORATION AND HELD IN FAIRBORN, OHIO ON 25, 26, AND 27 OCTOBER 1972. MAJOR TECHNICAL AREAS DISCUSSED INCLUDED BIOLOGIC THRESHOLD LIMITS; TOXICOLOGY OF HALOGENATED SOLVENTS, AEROSOL PROPELLANTS, AND FIRE EXTINGUISHANTS; AND PYROLYSIS AND ROCKET EXHAUST PRODUCTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 774 673 21/4

BUREAU OF MINES BARTLESVILLE OKLA BARTLESVILLE ENERGY RESEARCH CENTER

ANALYSIS OF AVIATION GAS TURBINE FUELS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 73 14P HURN,R. W. ;
CONTRACT: DOT-AS-20058
MONITOR: FAA-RD 73-189

UNCLASSIFIED REPORT

DESCRIPTORS: *AVIATION FUELS, *TRACE ELEMENTS, *AIR POLLUTION, EXHAUST GASES, GAS TURBINES, OXYGEN, CARBON DIOXIDE, CARBON MONOXIDE, METHANE, HYDROCARBONS, NITROGEN OXIDES, METALS, FORMALDEHYDE, ALDEHYDES, ALUMINUM, BARIUM, CALCIUM, CADMIUM, VANADIUM, COPPER, IRON, LEAD(METAL), POTASSIUM, MANGANESE, MAGNESIUM, SODIUM, ZINC (U)
IDENTIFIERS: *AIRCRAFT EXHAUST (U)

EXPERIMENTAL WORK WAS DONE TO DETERMINE FOR AVIATION TURBINE FUELS THE TRACE COMPONENTS THAT COULD BE SOURCE MATERIAL OF ATMOSPHERIC POLLUTANT. DATA WERE OBTAINED ON BOTH U.S. AND EUROPEAN AREA FUELS. OTHER ANALYTICAL DATA WERE OBTAINED FOR TURBINE EXHAUST GASES AND, CONCURRENTLY, ON THE FUELS USED IN PRODUCING THE EXHAUST. THE OBJECTIVE IN THE ENGINE EXHAUST STUDY WAS TO CORRELATE, IF POSSIBLE, THE PRESENCE OF FUEL TRACE COMPONENTS AND THE APPEARANCE OF SUCH COMPONENTS IN THE AIRCRAFT EMISSIONS. RESULTS OF THE STUDY, WHICH TOO-LIMITED TO BE DEFINITIVE, NONETHELESS SUGGEST THAT TRACE ELEMENTS OF FUELS CAN BE CONTROLLED AT LEVELS SUCH THAT THE FUEL IS NOT SIGNIFICANT AS A SOURCE OF THOSE ELEMENTS AS AIRCRAFT EMISSIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 775 094 21/5 21/2 13/2
CALIFORNIA UNIV BERKELEY DEPT OF MECHANICAL ENGINEERING

FACTORS CONTROLLING POLLUTANT EMISSIONS FROM GAS TURBINE ENGINES, (U)

74 15P SAWYER,ROBERT F. ;CERNANSKY, NICHOLAS P. ;OPPENHEIM,ANTONI K. ;
CONTRACT: AF-AFOSR-2299-72, AF-AFOSR-2200-72
PROJ: AF-9750
TASK: 975002
MONITOR: AFOSR TR-74-0192

UNCLASSIFIED REPORT

DESCRIPTORS: *GAS TURBINES, *AIR POLLUTION, SMOKE, ALDEHYDES, HYDROCARBONS, COMBUSTION, EXHAUST GASES, AIRCRAFT ENGINES, CARBON MONOXIDE, PARTICULATES, NITROGEN OXIDES, OPERATION (U)

PRIMARY POLLUTANTS EMITTED BY AIRCRAFT GAS TURBINE ENGINES ARE CARBON MONOXIDE, HYDROCARBONS, ALDEHYDES, SMOKE, PARTICULATES, AND NITRIC OXIDE. FACTORS CONTROLLING EMISSIONS OF THESE POLLUTANTS ARE ANALYZED ON THE BASIS OF AIRCRAFT ENGINE EXHAUST COMPOSITION AND LABORATORY STUDIES OF GAS TURBINE COMBUSTION PROCESSES. MOREOVER, AN ANALYTICAL PREDICTION OF THE EFFECT OF AIRCRAFT OPERATING PARAMETERS ON THE EMISSION OF NITRIC OXIDE IS ALSO GIVEN. OPERATIONAL CONDITIONS AND ENGINE PARAMETERS SUCH AS AMBIENT TEMPERATURE, PRESSURE, AND HUMIDITY, FLIGHT ALTITUDE, FLIGHT MACH NUMBER, WATER INJECTION, FUEL PROPERTIES, AND COMBUSTOR CHARACTERISTICS HAVE BEEN STUDIED ANALYTICALLY, YIELDING RATIONAL CRITERIA FOR THE PREDICTION OF THEIR EFFECT ON THE EMISSION OF NITRIC OXIDE. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 778 769 21/5 13/2 21/2
AVCO LYCOMING DIV STRATFORD CONN

T53 AND T55 GAS TURBINE COMBUSTOR AND ENGINE EXHAUST EMISSION MEASUREMENTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 72-FEB 73, DEC 73 222P RUBINS,PHILIP M. ;DOYLE, BRIAN W. ;
REPT. NO. LYC-73-8
CONTRACT: DAAJ02-72-C-0102
PROJ: DA-1-G-162207-AA-71
TASK: 1-G-162207-AA-7102
MONITOR: USAAMRDL TR-73-47

UNCLASSIFIED REPORT

DESCRIPTORS: *GAS TURBINES, *EXHAUST GASES, SMOKE, HYDROCARBONS, COMBUSTION CHAMBERS, CARBON MONOXIDE, NITROGEN OXIDES, CARBON DIOXIDE, PROFILES, AIR POLLUTION, GAS ANALYSIS, POWER, LABORATORY TESTS, PERFORMANCE(ENGINEERING) (U)
IDENTIFIERS: T-53 ENGINES, T-55 ENGINES, T-53-L-13-A ENGINES, T-55-L-11A ENGINES, AIR FUEL RATIO, COMBUSTION EFFICIENCY (U)

THE PURPOSE OF THE PRESENT TESTS WAS TO EVALUATE GAS TURBINE ENGINES AND COMBUSTORS FROM A POLLUTANT STANDPOINT AND COMPARE THE RESULTS WITH THE CURRENT STATE OF THE ART. EXTENSIVE TESTS WERE MADE TO DETERMINE THE GASEOUS EXHAUST EMISSION CHARACTERISTICS OF BOTH A T53-L-13A AND A T55-L-11A LYCOMING GAS TURBINE ENGINE. IN ADDITION, THE COMBUSTOR FOR EACH ENGINE WAS TESTED SEPARATELY UNDER LABORATORY CONDITIONS SIMULATING ENGINE OPERATION, WITH SIMILAR MEASUREMENTS OF GASEOUS EMISSIONS. DATA WERE ANALYZED FOR THE FULL RANGE OF ENGINE POWER OPERATION FOR CO, HYDROCARBONS, NO, NOX, AND CO2, AND FOR SMOKE. SAMPLES WERE TAKEN WITH SIX-POINT TRAVERSING PROBES, WITH A SINGLE-POINT TRAVERSING PROBE, AND WITH MULTIORIFICE AVERAGING-TYPE PROBES. EXTENSIVE PROFILE DATA PLOTTED ALONG DIAMETERS OF THE ENGINE EXHAUST, AROUND THE CIRCUMFERENCE OF THE COMBUSTOR EXIT PLANE, AND AS ISOPLETH MAPS ARE PRESENTED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 778 938 13/2 7/4
MONSANTO RESEARCH CORP DAYTON OHIO DAYTON LAB

AN ASSESSMENT OF INSTRUMENTATION AND MONITORING NEEDS FOR SIGNIFICANT AIR POLLUTANTS EMITTED BY AIR FORCE OPERATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH ON ANALYSIS OF POLLUTANTS. (U)

DESCRIPTIVE NOTE: INTERIM TECHNICAL REPT. 1 DEC 72-31 JAN 74,
FEB 74 184P PARTS,LEO ;PUSTINGER,JOHN V. ;ROSS,WILLIAM D. ;SNYDER,ARTHUR D. ;YU, HENRY H. S. ;
CONTRACT: F33615-72-C-1304
PROJ: AF-7023
TASK: 702304
MONITOR: ARL TR-74-0015

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *MONITORING, *AIR FORCE OPERATIONS, ODORS, PARTICULATES, EXHAUST GASES, METALS, ROCKET EXHAUST, HERBICIDES, INCINERATORS, GAS ANALYSIS, ORGANIC COMPOUNDS, CHEMICAL ANALYSIS, MEASURING INSTRUMENTS (U)
IDENTIFIERS: AIRCRAFT EXHAUST, AIR POLLUTION DETECTION, AUTOMOBILE EXHAUST (U)

RELIABLE MONITORING TECHNOLOGY IS REQUIRED TO CONTROL NOXIOUS EFFLUENTS ARISING FROM AIR FORCE'S OPERATIONS. PRESENT AND PROJECTED MONITORING NEEDS HAVE BEEN ESTABLISHED. PRESENTLY USED MONITORING TECHNIQUES ARE DISCUSSED. RESEARCH AND DEVELOPMENT ACTIVITIES IN GOVERNMENTAL, INDUSTRIAL, AND EDUCATIONAL ORGANIZATIONS, RELEVANT TO AIR FORCE'S MONITORING NEEDS, HAVE BEEN IDENTIFIED. RECOMMENDATIONS REGARDING INSTRUMENT DEVELOPMENT, TO MEET THE EXISTING AND FORESEEABLE REQUIREMENTS, ARE PRESENTED IN THE FOLLOWING AREAS: VOLATILE AIRCRAFT EMISSIONS, PARTICULATE AIRCRAFT EMISSIONS, MISSILE-RELATED SUBSTANCES, METALLIC ELEMENT EMISSION SOURCES, HERBICIDE DISPOSAL OPERATIONS, AMBIENT AIR, AND SPECIAL MONITORING NEEDS. GENERAL RECOMMENDATIONS SPECIFY AREAS IN WHICH FUNDAMENTAL RESEARCH IS OF VITAL IMPORTANCE. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 779 150 13/2 4/2 20/4 1/2
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT
PARIS (FRANCE)

THE FLUID DYNAMICS ASPECTS OF AIR
POLLUTION RELATED TO AIRCRAFT OPERATIONS, (U)

FEB 74 53P LIBBY,PAUL A. ;
REPT. NO. AGARD-AR-55

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO FURNISHED.

DESCRIPTORS: *AIR POLLUTION, *AIRCRAFT, PLUMES,
AIRPORTS, UPPER ATMOSPHERE, ATMOSPHERIC MOTION,
EXHAUST GASES, DISPERSING, OPERATION, MASS
TRANSFER, SMOKE, MEETINGS (U)
IDENTIFIERS: *AIRCRAFT EXHAUST, ATMOSPHERIC
DIFFUSION, JET ENGINE EXHAUST (U)

THE REPORT GIVES AN OVERVIEW OF TECHNICAL PROBLEMS
AND ACTIVITIES IN THE NATO COUNTRIES RELATED TO
THEIR STUDY IN THE FIELD OF AIR POLLUTION WITH
SPECIAL EMPHASIS ON AIRCRAFT OPERATIONS. CHAPTER
TITLES INCLUDE THE DISPERSION OF POLLUTANTS FROM
AIRCRAFT; AIR POLLUTION CHARACTERISTICS OF AIRCRAFT
ENGINES; RESEARCH IN GERMANY ON FLUID DYNAMICS OF
AIR POLLUTION RELATED TO AIRCRAFT OPERATIONS;
PRELIMINARY NOTES ON LARGE SCALE MASS TRANSPORT; AIR
POLLUTION FROM AIRCRAFT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 779 551 4/2 13/2
BATTELLE PACIFIC NORTHWEST LABS RICHLAND WASH ATMOSPHERIC SCIENCES DEPT

PRECIPITATION SCAVENGING OF ORGANIC CONTAMINANTS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
APR 74 105P HALES,JEREMY M. ;LEE,
RICHARD N. ;
CONTRACT: DAHC04-72-C-0035
PROJ: AROD-P-10417-EN
MONITOR: AROD 10417.1-EN

UNCLASSIFIED REPORT

DESCRIPTORS: *ORGANIC COMPOUNDS, *AIR POLLUTION, SOLUBILITY, VAPORS, ATMOSPHERIC PRECIPITATION, CONTAMINANTS, TRACER STUDIES, COMPUTERIZED SIMULATION, MATHEMATICAL MODELS, ATMOSPHERIC DIFFUSION, PLUMES, COMPUTER PROGRAMS (U)
IDENTIFIERS: *ACETOACETIC ACID/(ETHYL-ESTER), *DIETHYLAMINE, *PRECIPITATION WASHOUT (U)

THE EPAEC GAS WASHOUT MODEL HAS BEEN APPLIED TO THE ORGANIC TRACERS ETHYLACETOACETATE AND DIETHYLAMINE. THIS MODEL USES SOURCE STRENGTH, VAPOR SOLUBILITY AND BASIC METEOROLOGICAL PARAMETERS TO ESTIMATE THE TRACER CONCENTRATION IN DOWNWIND RAIN SAMPLES. A DETAILED ERROR ANALYSIS HAS IDENTIFIED POORLY DEFINED TRACER SOLUBILITY AS THE MAJOR SOURCE OF MEASURED DISCREPANCY WITH PREDICTIONS. FIELD RESULTS HAVE ALSO BEEN USED TO CALCULATE THE FRACTIONAL WASHOUT OF THE VAPOR PER KILOMETER FROM THE SOURCE. THE RESULTS TOGETHER WITH EXISTING DIFFUSION MODELS MAY BE USED TO ESTIMATE THE VAPOR CONCENTRATIONS OF THESE MATERIALS ALONG A PLUME TRAJECTORY. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 779 786 21/5 13/2
PRATT AND WHITNEY AIRCRAFT WEST PALM BEACH FLA

LOW-POWER TURBOPROPULSION COMBUSTOR EXHAUST EMISSIONS. VOLUME II. DEMONSTRATION AND TOTAL EMISSION ANALYSIS AND PREDICTION. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 DEC 72-28 FEB 74,
APR 74 230P MOSIER,STANLEY A. ;ROBERTS, RICHARD ;
REPT. NO. PWA-FR-6098
CONTRACT: F33615-71-C-1870
PROJ: AF-3066
TASK: 306605
MONITOR: AFAPL TR-73-36-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-762 935.

DESCRIPTORS: *EXHAUST GASES, *GAS TURBINES, *AIR POLLUTION, TURBOFAN ENGINES, HYDROCARBONS, CARBON MONOXIDE, COMBUSTION CHAMBERS, MATHEMATICAL MODELS, GAS ANALYSIS, SMOKE ABATEMENT, PREDICTIONS, TEST METHODS, PRESSURE (U)
IDENTIFIERS: DESIGN, AIR POLLUTION CONTROL, GAS SAMPLING, JT8D ENGINES (U)

AN EXPLORATORY DEVELOPMENT PROGRAM WAS CONDUCTED TO IDENTIFY, EVALUATE, AND DEMONSTRATE IMPROVED COMBUSTION DESIGN TECHNIQUES FOR INCREASING COMBUSTION EFFICIENCY AT PART-POWER OPERATING CONDITIONS, THEREBY REDUCING UNDESIRABLE AND POTENTIALLY HAZARDOUS EXHAUST EMISSIONS. THE MOST PROMISING OF THE LOW-POWER DESIGN TECHNIQUES INVESTIGATED, FUEL-AIR PREMIXING AND VIRTUAL STAGING, WERE INCORPORATED INTO AN ANNULAR BURNER CONFIGURATION AND A DETAILED EXPERIMENTAL EVALUATION OF THE COMBUSTION SYSTEM WAS ACCOMPLISHED. THE BURNER WAS EXAMINED AT BOTH LOW-POWER AND SIMULATED DESIGN-POINT OPERATING CONDITIONS. RELATIVE TO THE PART-POWER GOALS THAT SERVED AS GUIDELINES FOR THE DEMONSTRATION HARDWARE, VIZ. A SMOKE NUMBER LESS THAN 20, CARBON MONOXIDE CONCENTRATION OF 10 PPMW, TOTAL UNBURNED HYDROCARBON CONCENTRATION OF 10 PPMW, AND COMBUSTION EFFICIENCY GREATER THAN 98%, THOSE RELATING TO SMOKE, HYDROCARBON CONCENTRATION, AND EFFICIENCY WERE EXCEEDED; THAT RELATING TO CARBON MONOXIDE CONCENTRATION WAS APPROACHED.

 (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 780 049 13/2 1/5 1/2
ARGONNE NATIONAL LAB ILL ENERGY AND ENVIRONMENTAL SYSTEMS DIV

AIRPORT VICINITY AIR POLLUTION STUDY. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 73 295P ROTE,D. M. ;HECHT,R. W.
;WANG,I. T. ;CIRILLO,R. R. ;WANGEN,L. E.
;
CONTRACT: DOT-FA71WAI-223
MONITOR: FAA-RD 73-113

UNCLASSIFIED REPORT

DESCRIPTORS: *AIRPORTS, *AIR QUALITY, *AIR POLLUTION, FLOW CHARTING, COMPUTERIZED SIMULATION, AIRCRAFT, DISPERSING, DATA ACQUISITION, ATMOSPHERIC MOTION, HYDROCARBONS, NITROGEN OXIDES, PARTICULATES, CARBON MONOXIDE, COMMERCIAL AVIATION, CIVIL AVIATION, OPERATION, ILLINOIS, CALIFORNIA (U)
IDENTIFIERS: ATMOSPHERIC DIFFUSION, AIRCRAFT EXHAUST, AIR QUALITY DATA, AIR QUALITY MONITORING, CHICAGO(ILLINOIS), LOS ANGELES(CALIFORNIA) (U)

THE REPORT DESCRIBES THE DEVELOPMENT OF A COMPUTER MODEL THAT CAN BE USED TO DETERMINE THE IMPACT OF AN EXISTING OR PLANNED AIRPORT ON THE AIR QUALITY IN ITS VICINITY. THE MODEL DEVELOPMENT WAS SUPPORTED BY AN AIR QUALITY MONITORING AND EMISSION ACTIVITY DATA ACQUISITION PROGRAM. O'HARE INTERNATIONAL AIRPORT, CHICAGO, ILLINOIS, AND ORANGE COUNTY AIRPORT, LOS ANGELES, CALIFORNIA WAS SELECTED AS TEST SITES, EACH BEING REPRESENTATIVE OF A PREDOMINANTLY COMMERCIAL AIRPORT AND A PREDOMINANTLY GENERAL AVIATION REPORT, RESPECTIVELY. THE ACTIVITY SIMULATION AND AIR QUALITY MODEL ARE DISCUSSED. RESULTS OF THE COMPUTATIONS OF AIR QUALITY CONCENTRATIONS AND COMPARISONS WITH OBSERVATIONS ARE PRESENTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 781 762 21/2 21/5 13/2
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB OHIO

PRELIMINARY STUDY OF THE CATALYTIC COMBUSTOR CONCEPT AS APPLIED TO AIRCRAFT GAS TURBINES. (U)

DESCRIPTIVE NOTE: FINAL REPT. JAN 72-FEB 74, MAY 74 65P BLAZOWSKI, WILLIAM S. ; BRESOWAR, GERALD E. ;
REPT. NO. AFAPL-TR-74-32
PROJ: AF-3048
TASK: 304805

UNCLASSIFIED REPORT

DESCRIPTORS: *COMBUSTION CHAMBERS, *GAS TURBINES, *AIR POLLUTION, *EXHAUST GASES, EMISSION, NITROGEN OXIDES, COMBUSTION, CATALYSIS (U)
IDENTIFIERS: *AIR POLLUTION CONTROL, JP-4 FUEL (U)

THE INVESTIGATION WAS INTENDED TO STUDY THE FEASIBILITY OF USING SOLID CATALYTIC BEDS IN THE REACTION ZONE OF AIRCRAFT GAS TURBINE COMBUSTORS. SINCE THE CATALYTIC COMBUSTOR OPERATES AT LOW-EQUIVALENCE RATIOS THROUGHOUT (THERE IS NO NEAR-STOICHIOMETRIC OPERATION AS IN MOST CONVENTIONAL COMBUSTORS), OXIDE OF NITROGEN EMISSIONS WERE FORECAST TO BE EXTREMELY LOW. JP-4 FUEL WAS USED THROUGHOUT THE EXPERIMENTAL TEST PROGRAM. FLASHBACK AND PREIGNITION WERE OBSERVED AND THE FUEL INTRODUCTION SYSTEM DEVELOPED TO PARTIALLY OVERCOME THESE PROBLEMS IS DESCRIBED. AT ALL OPERATING CONDITIONS TESTED, NOX CONCENTRATION WAS TO BE BELOW 2 PPMV -- TWO ORDERS OF MAGNITUDE BELOW THAT EXPECTED FROM A CONVENTIONAL COMBUSTOR OPERATED UNDER SIMILAR INLET AND EXHAUST CONDITIONS. NO REDUCTION IN PERFORMANCE WAS NOTED OVER THE 28 HOURS OF TEST OPERATION. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 783 828 13/2 21/5 15/7
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB OHIO

AIRCRAFT EXHAUST POLLUTION AND ITS EFFECT ON THE U.S. AIR FORCE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
AUG 74 134P BLAZOWSKI,WILLIAM S. ;
HENDERSON,ROBERT E. ;
REPT. NO. AFAPL-TR-74-64

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REVISION OF REPORT DATED NOV 72, AD-753 095.

DESCRIPTORS: *AIR POLLUTION, *AIRCRAFT ENGINES, *AIR FORCE, REVIEWS, MILITARY REQUIREMENTS, COMBUSTION CHAMBERS, AFTERBURNING, EXHAUST GASES, COSTS, SMOKE, NITROGEN OXIDES, HYDROCARBONS, CARBON MONOXIDE (U)
IDENTIFIERS: *AIRCRAFT EXHAUST, *AIR POLLUTION CONTROL, AIR POLLUTION STANDARDS, JET ENGINE EXHAUST (U)

THE REPORT PRESENTS INFORMATION THOUGHT TO BE NECESSARY IN ESTABLISHING AN AIR FORCE POLICY ON AIRCRAFT ENGINE POLLUTION. THE REASONS THAT DIFFERENT POLLUTANTS ARE EMITTED IS DISCUSSED. RELEVANCE OF THIS PROBLEM TO THE AIR FORCE IS ALSO INVESTIGATED. ACTIONS WHICH MAY BE TAKEN TO REDUCE POLLUTANTS ARE PRESENTED IN TERMS OF TECHNOLOGY LEVEL: CURRENT, MID-TERM, AND ADVANCED TECHNOLOGY. OPERATION, RELIABILITY AND MAINTAINABILITY, IMPLEMENTATION AND COST IMPACTS ARE EVALUATED FOR EACH OF THE TECHNOLOGY LEVELS. THE EPA STANDARDS AND POSSIBLE USE BY THE AIR FORCE ARE DISCUSSED. AIR FORCE GOALS, WHICH DIFFER FROM THE EPA STANDARDS IN METHOD OF SPECIFICATION, ARE DEVELOPED. THESE GOALS WILL PERMIT CONTROL TECHNOLOGY APPLICATION WITHOUT INFLUENCING BASIC ENGINE DESIGN PARAMETERS OR PERFORMANCE. THE COST TO MEET THESE GOALS IS ESTABLISHED FOR CURRENT AF SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 784 026 7/4 14/2 13/2
ARMY MATERIEL COMMAND TEXARKANA TEX INTERN TRAINING CENTER

THE SURVEY AND DEVELOPMENT OF EQUIPMENT AND TECHNIQUES CAPABLE OF MONITORING AUTOMOTIVE EXHAUST EMISSIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
MAR 73 141P REEVES,ALTON DOUGLAS ;
REPT. NO. USAMC-ITC-2-73-18

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: *GAS DETECTORS, *EXHAUST GASES, *MONITORS, *GAS ANALYSIS, *CARBON MONOXIDE, GAS CHROMATOGRAPHY, SAMPLERS, TEST METHODS, COLORIMETRIC ANALYSIS, CALIBRATION, HYDROCARBONS, NITROGEN OXIDES, REVIEWS, PERFORMANCE(ENGINEERING), AUTOMOTIVE VEHICLES (U)
IDENTIFIERS: *AUTOMOBILE EXHAUST, AIR POLLUTION CONTROL EQUIPMENT, SPECTROSCOPIC ANALYSIS, NONDISPERSIVE INFRARED SPECTROSCOPY, FLAME IONIZATION DETECTORS (U)

THE NATIONAL CONCERN OVER THE CONTRIBUTION OF AUTOMOTIVE EMISSIONS TO AIR POLLUTION HAS PROVIDED THE IMPETUS FOR THE ESTABLISHMENT OF STRINGENT EMISSION CONTROL REQUIREMENTS. WITH THIS IS THE NEED TO HAVE AVAILABLE SUITABLE INSTRUMENTATION CAPABLE OF MONITORING EXHAUST EMISSIONS AND INSURING THAT POLLUTION CONTROL DEVICES ARE OPERATING EFFECTIVELY. THIS STUDY SURVEYS THE INSTRUMENTATION AVAILABLE CAPABLE OF MONITORING EXHAUST EMISSIONS. INCLUDED ARE EQUIPMENT TYPES, THEIR PRINCIPLES OF OPERATION, THEIR OPERATING CHARACTERISTICS, THEIR SOURCES, AND THEIR PARTICULAR APPLICATIONS. MATERIAL RELEVANT TO EMISSION MEASUREMENT SYSTEMS IS GENERALLY COVERED. DEVELOPMENT WORK ON A SIMPLE COLORIMETRIC METHOD OF DETECTING CARBON MONOXIDE IN AUTOMOTIVE EXHAUST IS CARRIED OUT. ALTHOUGH A SIMPLE LIGHT EMITTING DIODE AND PHOTOTRANSISTOR CIRCUIT PERFORMS WELL IN DETECTING THE REACTIONS INVOLVED, COMPLICATIONS TO THE SYSTEM ARE THREATENED BY A NUMBER OF VARIABLES WHICH HAVE TO BE CLOSELY CONTROLLED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 784 845 6/10 6/20
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

INDUSTRIAL HYGIENE ASPECTS OF CARBON MONOXIDE. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
MAR 74 39P DIAMOND,PHILIP ;
REPT. NO. EHL-M-74M-2
PROJ: EHL-M-HAI-345

UNCLASSIFIED REPORT

DESCRIPTORS: *CARBON MONOXIDE, *INDUSTRIAL HYGIENE, *AIR POLLUTION, TOXICITY, DETECTION, PHYSIOLOGICAL EFFECTS, CONTROL, SOURCES, EXPOSURE(PHYSIOLOGY), ENVIRONMENTS, INTERNAL COMBUSTION ENGINES, HEATING, AIRCRAFT, CHEMICALS, TABLES(DATA) (U)
IDENTIFIERS: AIR POLLUTION CONTROL, AIR POLLUTION EFFECTS(HUMANS), CARBONYLHEMOGLOBIN, INDOOR AIR POLLUTION (U)

CARBON MONOXIDE WAS RECENTLY THE SUBJECT OF A LABORATORY SEMINAR, AND THE INFORMATION IS PRESENTED HERE FOR THE CONVENIENCE OF THE FIELD BIOENVIRONMENTAL ENGINEER. CARBON MONOXIDE IS A COLORLESS, ODORLESS GAS GENERALLY PRODUCED BY INCOMPLETE OXIDATION OF ORGANIC OR CARBONACEOUS MATERIAL. IT IS THE MOST WIDELY ENCOUNTERED TOXIC GAS. FREQUENTLY IT IS ACCOMPANIED BY THE ODOR OF OTHER ORGANIC BY-PRODUCTS OF COMBUSTION SUCH AS ALDEHYDES AND HYDROCARBONS. THE THREE MAIN SOURCES OF THIS GAS ARE SMOKING, INTERNAL COMBUSTION ENGINES AND HEATING EQUIPMENT. THE TOXICITY OF CO, METHODS OF CO DETECTION, SUBCLINICAL CO EFFECTS, SOURCES OF CO AND EXPOSURE CONTROL MEASURES ARE DISCUSSED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 784 900 21/5 13/2
PRATT AND WHITNEY AIRCRAFT WEST PALM BEACH FLA

LOW-POWER TURBOPROPULSION COMBUSTOR EXHAUST EMISSIONS. VOLUME III. ANALYSIS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 APR-30 JUN 74,
JUL 74 63P MOSIER,STANLEY A. ;ROBERTS, RICHARD ;
REPT. NO. PWA-FR-6487
CONTRACT: F33615-71-C-1870
PROJ: AF-3066
TASK: 306605
MONITOR: AFAPL TR-73-36-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-779 786.

DESCRIPTORS: *EXHAUST GASES, *GAS TURBINES, *AIR POLLUTION, COMBUSTION, COMPUTER PROGRAMS, MATHEMATICAL MODELS, TURBOFAN ENGINES, HYDROCARBONS, REACTION KINETICS, PREDICTIONS, COMBUSTION CHAMBERS, GAS ANALYSIS, PRESSURE, NITROGEN OXIDES, TEST METHODS (U)
IDENTIFIERS: AIR POLLUTION CONTROL, JT9D ENGINES, JT8D ENGINES, GAS SAMPLING (U)

THE EXPLORATORY DEVELOPMENT EFFORT TO FORMULATE AND DEVELOP A COMPUTERIZED THEORETICAL MODEL TO PREDICT EMISSION CHARACTERISTICS OF GAS TURBINE COMBUSTORS AND TO IDENTIFY, EVALUATE, AND DEMONSTRATE IMPROVED COMBUSTION DESIGN TECHNIQUES FOR INCREASING COMBUSTION EFFICIENCY AT PART POWER OPERATING CONDITIONS WAS EXPANDED TO INCLUDE DETAILED COMPUTER MODEL AND EXPERIMENTAL DATA ANALYSES. THE GENERALIZED COMBUSTOR COMPUTER PROGRAM WAS USED TO PREDICT EXHAUST EMISSION CONCENTRATIONS FROM FIVE DIFFERENT GAS TURBINE ENGINE BURNERS; PREDICTIONS WERE THEN COMPARED WITH MEASURED DATA. IN GENERAL, EXCELLENT AGREEMENT WAS ACHIEVED. IN ADDITION, A DETAILED COMPARATIVE ANALYSIS OF EXPERIMENTAL DATA GENERATED DURING THE LOW-PRESSURE AND HIGH-PRESSURE TEST PROGRAMS WAS CONDUCTED. FROM THIS ANALYSIS A PHENOMENOLOGICAL MODEL FOR THE PREMIXING TUBE/VIRTUAL STAGING BURNER WAS PREPARED. FINALLY, A WORKHORSE, VARIABLE GEOMETRY PREMIXING BURNER WAS DESIGNED FOR REDUCING CONCENTRATIONS OF EXHAUST EMISSIONS OVER THE OPERATING RANGE FROM PART TO FULL POWER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 785 347 21/2 7/4 7/2
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

FORMATION OF MIXED MOLECULAR CLUSTERS IN FREE-JET EXPANSIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 16 MAY-22 JUN 73, SEP 74 44P BAILEY,A. B. ;POWELL,H. M. ;
REPT. NO. AEDC-TR-74-39
PROJ: AF-6687, ARO-VF224

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO, INC., TULLAHOMA, TENN., REPT. NO. ARO-VKF-TR-74-14.

DESCRIPTORS: *EXHAUST GASES, *MASS SPECTROSCOPY, MOLECULES, IONS, AIR POLLUTION, MOLECULAR BEAMS, NITROGEN, NITROGEN OXIDES, SULFUR OXIDES, CARBON DIOXIDE, WATER VAPOR, SIMULATION, METHANE, PRESSURE, TEMPERATURE, CHEMICAL COMPOSITION, STRATOSPHERE, EXPERIMENTAL DESIGN, MASS SPECTRA (U)
IDENTIFIERS: *JET ENGINE EXHAUST, *ION CLUSTERS (U)

TO DETERMINE THE CONCENTRATIONS OF JET ENGINE POLLUTANTS IN THE STRATOSPHERE, IT IS NECESSARY TO OBTAIN INFORMATION CONCERNING THE MOLECULAR CLUSTERING CHARACTERISTICS OF POLLUTANT SPECIES. IN THE PRESENT INVESTIGATION, A SIMULATION OF JET ENGINE EXHAUST EMISSIONS HAS BEEN ACCOMPLISHED BY EXPANDING VARIOUS GAS/WATER MIXTURES FROM A MOLECULAR BEAM SOURCE AND MASS ANALYZING THE RESULTING MOLECULAR BEAM. IT WAS FOUND POSSIBLE TO PRODUCE IONIC CLUSTERS CONTAINING VARIOUS COMBINATIONS OF N2, CO2, SO2, CH4, AND H2O. (MODIFIED AUTHOR ABSTRACT) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 808 580 7/5
AEROSPACE CORP EL SEGUNDO CALIF LABS DIV

THE ROLE OF NITRIC OXIDE IN PHOTOCHEMISTRY. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. 1 MAR-1 AUG 66,
OCT 66 301P HEICKLEN,JULIAN ;COHEN,
NORMAN ;
REPT. NO. TR-1001(2250-40)-4
CONTRACT: AF 04(695)-1001
MONITOR: SSD TR-66-190

UNCLASSIFIED REPORT

DESCRIPTORS: (*PHOTOCHEMICAL REACTIONS, *NITROGEN OXIDES), GUIDED MISSILES, EXHAUST GASES, AIR POLLUTION, UPPER ATMOSPHERE, NITROSO COMPOUNDS, EXCITATION, ELECTRONS, MOLECULAR ENERGY LEVELS, ULTRAVIOLET SPECTRA, VISIBLE SPECTRA, MOLECULAR ORBITALS, GROUND STATE, QUENCHING(INHIBITION), FLUORESCENCE, REACTION KINETICS, OXYGEN, OZONE, CHEMILUMINESCENCE, HALOGENS, XENON, FLUORIDES, AZINES, BORON COMPOUNDS, FREE RADICALS, ALKANES, ALDEHYDES, KETONES, MOLECULAR ISOMERISM (U)
IDENTIFIERS: DIFLUORODIAZINE, NITROGEN OXIDE(N2O5), NITROGEN OXIDE(NO), NITROGEN OXIDE(NO2), XENON TETRAFLUORIDE, XENON DIFLUORIDE (U)

THE GAS PHASE CHEMISTRY OF NITRIC OXIDE IS REVIEWED FOR REACTIONS OF IMPORTANCE BELOW ABOUT 300 C. INCLUDED ARE REACTIONS OF VIBRATIONALLY AND ELECTRONICALLY EXCITED NO AND THE REACTIONS OF NO WITH STABLE MOLECULES, ELECTRONICALLY EXCITED MOLECULES, ATOMS, IONS, AND RADICALS. THE FATE OF NITROSO COMPOUNDS IS ALSO DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 841 125 13/2 21/2
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF

MULTISTAGE FLASH DESALINATION UNIT UTILIZING DIESEL GENERATOR WASTE HEAT. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. JUL 65-JUN 67, SEP 68 25P WILLIAMSON,J. S. ;HODGSON, A. S. ;
REPT. NO. NCEL-TR-595
PROJ: Y-F015-11-04-611

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIESEL ENGINES, EXHAUST GASES), (*SEA WATER, *DESALINATION), THERMAL CONDUCTIVITY, EVAPORATORS, HEAT TRANSFER, HEAT TRANSFER COEFFICIENTS, DISTILLING PLANTS, SALINITY, CORROSION RESISTANT ALLOYS, ALUMINUM, DESIGN, PERFORMANCE(ENGINEERING), HEAT OF VAPORIZATION, ANALYSIS OF VARIANCE, CURVE FITTING (U)

A MULTISTAGE FLASH EVAPORATOR UTILIZING DIESEL GENERATOR WASTE HEAT HAS BEEN DEVELOPED FOR DESALINATION. AFTER PRELIMINARY EXPERIMENTAL STUDIES, A UNIT WAS CONSTRUCTED TO OPERATE CONTINUOUSLY FROM A VARIABLE HEAT SUPPLY AND PRODUCE BETWEEN 2,500 AND 6,000 GPD OF FRESHWATER. INTERSTAGE BRINE TRANSFER IS AUTOMATICALLY REGULATED BY LEVEL CONTROLLERS IN EACH STAGE, THUS ELIMINATING THE NEED FOR MANUAL CONTROL OF THE UNIT AS THE GENERATOR LOAD AND HENCE HEAT OUTPUT VARIES. ALL-ALUMINUM CONSTRUCTION HAS REDUCED CORROSION, AND THE UNIT HAS PERFORMED SATISFACTORILY DURING TESTS. TYPICAL EXPERIMENTAL DATA IS INCLUDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 849 739 7/2 13/2
AIR FORCE ROCKET PROPULSION LAB EDWARDS AFB CALIF

THE SPECIFIC DETERMINATION OF AIR-BORNE HYDROGEN CHLORIDE. (U)

DESCRIPTIVE NOTE: FINAL REPT. MAR 68-MAR 69, MAR 69 29P DEE,L. A. ;CITRO,M. F. ; ZIEGE,G. E. ;
REPT. NO. AFRPL-TR-69-71
PROJ: AF-3059

UNCLASSIFIED REPORT

DESCRIPTORS: (*HYDROCHLORIC ACID, *GAS ANALYSIS), (*SOLID ROCKET PROPELLANTS, EXHAUST GASES), (*EXHAUST GASES, AIR POLLUTION), QUANTITATIVE ANALYSIS, SILVER COMPOUNDS, NITRATES (U)
IDENTIFIERS: HYDROGEN CHLORIDE, SILVER NITRAT, JOINT PANEL AMMUNITION DISPOSAL, JPAD(JOINT PANEL AMMUNITION DISPOSAL) (U)

A NUMBER OF TECHNIQUES POTENTIALLY APPLICABLE TO THE QUANTITATIVE MEASUREMENT OF GASEOUS HYDROGEN CHLORIDE WERE SURVEYED. SELECTION OF THE DEVICE DESCRIBED HEREIN, A SMALL GLASS TUBE FILLED WITH AGNO3-COATED PARTICLES, WAS BASED ON ITS UNIQUE SPECIFICITY, SIMPLICITY, AND SENSITIVITY. LABORATORY EVALUATION OF THIS DEVICE UNDER VARIED SIMULATED ATMOSPHERIC CONDITIONS INCLUDING HUMIDITY AND CHEMICAL INTERFERENCE (E.G., NO2, NACL PARTICLES) INDICATES THAT IT MAY BE USEFUL FOR FIELD MEASUREMENT OF AIR-BORNE HCL RESULTING FROM THE COMBUSTION OF LARGE QUANTITIES OF SOLID PROPELLANT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 849 764 7/5 21/9 14/2
PANAMETRICS INC WALTHAM MASS

DEVELOPMENT OF A PROTOTYPE VAPOR DETECTION DEVICE FOR ATMOSPHERIC SAMPLING AND ANALYSIS FOR FLUORINE AND HYDROGEN FLUORIDE. (U)

DESCRIPTIVE NOTE: FINAL REPT. FEB 66-OCT 67,
NOV 68 59P CUCCHIARA,ORLANDO ;GOODMAN,
PHILIP ;DONAGHUE,THOMAS ;
CONTRACT: AF 04(611)-11409
PROJ: AF-3850
MONITOR: AFRPL TR-68-233

UNCLASSIFIED REPORT

DESCRIPTORS: (*FLUORINE, *EXHAUST GASES), (*GAS ANALYSIS, *FLUORINE COMPOUNDS), ROCKET PROPELLANTS, FLUORIDES, RADIOACTIVE ISOTOPES, AIR POLLUTION, HYDROGEN COMPOUNDS, RADIATION CHEMISTRY, EXCHANGE REACTIONS (U)
IDENTIFIERS: ATMOSPHERES, SAMPLING (U)

A PROTOTYPE MODEL OF AN INSTRUMENT WHICH DEMONSTRATES THE APPLICABILITY OF THE RADIOCHEMICAL EXCHANGE TECHNIQUE TO SIMULTANEOUSLY DETECT FLUORINE AND HYDROGEN FLUORIDE WAS DEVELOPED. THE INSTRUMENT UTILIZES SILICON KRYPTONATE FOR THE DETECTION OF HYDROGEN FLUORIDE AND HYDROQUINONE CLATHRATE FOR THE DETECTION OF FLUORINE. THIS REPORT DESCRIBES THE CONSTRUCTION, CALIBRATION AND A LABORATORY EVALUATION OF THE PERFORMANCE OF THE INSTRUMENT. THE INSTRUMENT WILL SIMULTANEOUSLY DETECT HYDROGEN FLUORIDE AT CONCENTRATIONS OF 0-50 PPM BY VOLUME AND FLUORINE AT 0-10 PPM BY VOLUME. THE DETECTION SYSTEM IS COMPRISED OF THREE PACKAGES WHICH CAN BE INTERCONNECTED FOR 8-HOUR OR 24-HOUR BATTERY OPERATION OR FOR 24-HOUR 115V, 60 HZ LINE OPERATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 877 045 13/2 14/2
AIR FORCE ROCKET PROPULSION LAB EDWARDS AFB CALIF

ATMOSPHERIC DIFFUSION OF BERYLLIUM PROGRAM (PROJECT ADOBE). VOLUME II. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. APR 64-FEB 70, JUN 70 169P
TUCKER,GORDON L. ;MALONE, HUGH E. ;SMITH,ROBERT W. ;
REPT. NO. AFRPL-TR-70-65-VOL-2
PROJ: AF-3059
TASK: 305999, 305907

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 3, AD-877 206.

DESCRIPTORS: (*AIR POLLUTION, BERYLLIUM), (*BERYLLIUM, DIFFUSION), (*SOLID PROPELLANT ROCKET ENGINES, CAPTIVE TESTS), (*TEST FACILITIES, SOLID PROPELLANT ROCKET ENGINES), WIND, VELOCITY, TABLES(DATA), EXHAUST GASES, SAMPLING (U)
IDENTIFIERS: ADOBE(ATMOSPHERE DIFFUSION OF BERYLLIUM), ADOBE PROJECT, ATMOSPHERIC DENSITY, DIFFUSION (U)

THE REPORT PRESENTS TABULATIONS OF THE DIFFUSION DATA AND METEOROLOGICAL DATA COLLECTED DURING THE PROJECT ADOBE DIFFUSION PROGRAM. THIS PROGRAM WAS A FIELD INVESTIGATION WHICH PROVIDED EXPERIMENTAL DATA ON THE DIFFUSION BY BERYLLIUM FROM 100 LBS TO 4000 LBS SOLID ROCKET MOTORS FIRED OVER A 25 SQUARE MILE SECTOR ARRAYED WITH 492 AIR SAMPLERS (250-350 PER TEST) LOCATED FROM 600 METERS TO 9600 METERS FROM THE SOURCE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 881 018 13/2
NAVAL MATERIAL COMMAND WASHINGTON D C

REPORT ON U.S. NAVY ENVIRONMENTAL PROTECTION PROGRAM. (U)

DESCRIPTIVE NOTE: SUMMARY REPT.,
AUG 70 73P KALINSKY,J. L. ;
PROJ: F38-532

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *NAVY), (*WATER POLLUTION, NAVY), (*SANITARY ENGINEERING, NAVY), CONTAMINATION, ENVIRONMENT, EXPLOSIVES, SHIPS, WASTES(SANITARY ENGINEERING), DISPOSAL, EXHAUST GASES, AIRCRAFT NOISE(U)
IDENTIFIERS: OILS, POLLUTION, *CONTROL, *POLLUTION, WASTE TREATMEN, JOINT PANEL AMMUNITION DISPOSAL, JPAD(JOINT PANEL AMMUNITION DISPOSAL) (U)

THIS REPORT DEFINES THE ENVIRONMENTAL PROTECTION PROBLEMS OF THE U.S. NAVY, ASHORE AND AFLOAT, AND SETS FORTH MEANINGFUL RDT AND E REQUIREMENTS FOR EACH POLLUTION PROBLEM AREA. AFTER LISTING THE MAJOR OPERATIONAL PROBLEMS, THE EXISTING STATE-OF-THE-ART APPROACHES AND TECHNOLOGY ARE DESCRIBED, AND WHERE APPLICABLE, A TECHNICAL APPRAISAL IS RENDERED FOR SHORT RANGE AND LONG RANGE SOLUTIONS. MAJOR NAVY PROBLEMS CONSIDERED ARE:SHIPBOARD SANITARY WASTE TREATMENT AND DISPOSAL SYSTEMS; OIL POLLUTION OF WATER RESULTING FROM PUMPING OF BILGES, DEBALLASTING OF FUEL OR CARGO OIL TANKS, PUMPING OF TANK SLOP, ACCIDENTAL AND DELIBERATE FUEL (JP-5 CONTAMINATION) SPILLAGE; AIRCRAFT ENGINE EXHAUST EMISSIONS AND NOISE; AND ORDNANCE MATERIAL (EXPLOSIVE, PROPELLANTS, PYROTECHNICS, AND OTTO FUEL) REPROCESSING AND RECLAMATION. OTHER PROBLEM AREAS INCLUDED ARE: INDUSTRIAL, GALLEY, AND TRASH WASTES FROM SHIPS; SHORE AND SHIP DESTRUCTION OF CLASSIFIED MATERIAL; SHIPS, ANTI-FOULING PAINTS; AIRCRAFT CLEANING AND STRIPPING; SHIPBOARD NOISE ABATEMENT; AND WASTE OIL DISPOSAL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 884 193 14/2

GENERAL DYNAMICS CORP SAN DIEGO CALIF CONVAIR AEROSPACE DIV

DEVELOPMENT OF HCL AND HF DETECTION SYSTEM. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUN 70-2 JUN 71, JUN 71 73P BARTLE,E. ROY ;MECKSTROTH, EDGAR A. ;KAYE,SAM ;
CONTRACT: F04611-70-C-0064
MONITOR: AFRPL TR-71-59

UNCLASSIFIED REPORT

DESCRIPTORS: (*GAS DETECTORS, *ACIDS), (*MONITORS, *EXHAUST GASES), (*AIR POLLUTION, GAS DETECTORS), HYDROGEN COMPOUNDS, CHLORIDES, FLUORIDES, GAS FILTERS, INFRARED SPECTROSCOPY, CONCENTRATION(CHEMISTRY), HYDROCHLORIC ACID, DESIGN (U)
IDENTIFIERS: *AIR POLLUTION DETECTION, GAS FILTER CORRELATION SYSTEMS, *FLUORIDES, *HYDROGEN, *HYDROGEN CHLORIDE, ROCKET EXHAUST (U)

THE GAS FILTER CORRELATION (GFC) TECHNIQUE FOR DETECTING HCL AND HF HAS BEEN DEMONSTRATED IN THE LABORATORY. THE BASIC IDEA OF THIS TECHNIQUE IS THAT A SAMPLE OF GAS CAN PROVIDE AN EFFICIENT SELECTIVE FILTER FOR ABSORBING INFRARED RADIATION EMITTED FROM A POLLUTED MIXTURE OF ATMOSPHERIC CONSTITUENTS. IN OPTICAL INSTRUMENT TERMS, SPECTRAL RESOLUTIONS OF BETTER THAN 0.1/CM MAY BE ACHIEVED. THUS, A HIGH SPECIFICITY IS ATTAINED FOR THE DETECTION OF A PARTICULAR POLLUTANT. A LABORATORY GFC INSTRUMENT HAS BEEN DEVELOPED AND APPLIED TO DETECT HCL AND HF OVER A CONCENTRATION RANGE OF 0.1 TO 2500 PPM AND DEMONSTRATED TO BE INSENSITIVE TO OTHER POSSIBLE INTERFERING PROPELLANT VAPORS. THE TEST PROCEDURES FOR CONDUCTING THE EXPERIMENTS ARE DESCRIBED. SERIOUS PROBLEMS WERE ENCOUNTERED IN THE SAMPLE CELL OF THE INSTRUMENT NAMELY, WALL ABSORPTION AND CHEMICAL REACTION EFFECTS. THESE PROBLEMS WILL ARISE IN ANY TYPE OF INSTRUMENT THAT USES A SAMPLE CELL OR SAMPLING SYSTEM. RECOMMENDATIONS ARE MADE AS TO HOW THESE PROBLEMS MAY BE ELIMINATED IN A PROPERLY DESIGNED GFC FIELD INSTRUMENT THAT DOES NOT REQUIRE A SAMPLE CELL OR SAMPLING SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 884 446 21/2 13/2 21/5
PURDUE UNIV LAFAYETTE IND JET PROPULSION CENTER

AN INVESTIGATION OF GAS TURBINE COMBUSTORS WITH HIGH INLET AIR TEMPERATURES. PART I: COMBUSTOR MODELLING. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 2, MAR 70-MAR 71, MAR 71 118P HAMMOND, DEAN C., JR.; MELLOR, ARTHUR M.;
REPT. NO. TM-71-1
CONTRACT: DAAE07-69-C-0756
MONITOR: TACOM TR-11321

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO PART 2, AD-884 359L AND PART 3, AD-884 357L.

DESCRIPTORS: (*EXHAUST GASES, MATHEMATICAL PREDICTION), (*COMBUSTION CHAMBERS, MATHEMATICAL MODELS), (*GAS TURBINES, AIR POLLUTION), THERMAL RADIATION, THERMAL ANALYSIS, HYDROCARBONS, PARTICLES, DYNAMICS, JET MIXING FLOW, DESIGN (U)
IDENTIFIERS: *GAS TURBINE COMBUSTORS (U)

AN ANALYTICAL MODEL HAS BEEN DEVELOPED WHICH WILL PREDICT THE PERFORMANCE AND POLLUTANT EMISSIONS OF GAS TURBINE COMBUSTORS. THE ENTIRE GAS TURBINE COMBUSTOR IS APPROXIMATED AS A COLLECTION OF PERFECTLY STIRRED ZONES. WITHIN EACH ZONE A GENERAL HYDROCARBON COMBUSTION MECHANISM IS USED TO PREDICT THE GAS COMPOSITION AND TEMPERATURE. THE ZONE VOLUMES AND SIZES ARE ASSIGNED FROM CONSIDERATION OF THE THEORETICALLY PREDICTED GAS FLOWS THEREBY APPROXIMATING THE MIXING BEHAVIOR OF THE SYSTEM. SELECTED PREDICTIONS OF THE OVERALL MODEL FOR A 'TYPICAL' AIRCRAFT COMBUSTOR ARE PRESENTED. THESE RESULTS ARE SEEN TO BE QUALITATIVELY ACCURATE AND FALL IN THE RANGE OF VALUES TYPICALLY OBSERVED IN PRACTICAL SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 891 325 13/2

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF SYSTEMS AND LOGISTICS

A CASE STUDY IN POLLUTION CONTROL: WRIGHT-PATTERSON AIR FORCE BASE. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
AUG 71 71P ZECK,FRANCIS H. ;
REPT. NO. SLSR-47-71B

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *MILITARY FACILITIES), (*AIR FORCE, AIR POLLUTION), LAW, HISTORY, CONTROL, INCINERATORS, EVAPORATION, OHIO, DEPARTMENT OF DEFENSE, AIRCRAFT ENGINES, PARTICLES, CARBON MONOXIDE, SULFUR COMPOUNDS, NITROGEN OXIDES, THESES (U)
IDENTIFIERS: *AIR POLLUTION, *CONTROL, GREENE COUNTY(OHIO), SULFUR DIOXIDE, *WRIGHT-PATTERSON AIR FORCE BASE (U)

THE PROBLEM OF MAINTAINING ENVIRONMENTAL QUALITY FACES MANAGERS AT ALL LEVELS OF GOVERNMENT SERVICE. THE STUDY DESCRIBES HOW A SELECTED UNITED STATES AIR FORCE BASE MANAGED ITS AIR POLLUTION PROBLEMS. A NON-TECHNICAL INTRODUCTION INTO THE NATURE OF AIR POLLUTION IS GIVEN. THE HISTORY OF AIR POLLUTION LEGISLATION IS DESCRIBED WITH EMPHASIS ON STATUTES AND EXECUTIVE ORDERS WHICH HAD THE GREATEST EFFECT ON THE MILITARY ESTABLISHMENT. A BRIEF DESCRIPTION OF DEPARTMENT OF DEFENSE PROGRAMS FOR AIR POLLUTION CONTROL IS FOLLOWED BY A DETAILED DISCUSSION OF AIR FORCE POLICIES AND PROGRAMS. THE SPECIFIC AIR POLLUTANTS AT WRIGHT-PATTERSON AFB ARE DETAILED AS WELL AS METHODS USED FOR CONTROL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 902 008 13/2 13/1
ARMY ENVIRONMENTAL HYGIENE AGENCY EDGEWOOD ARSENAL MD

EVALUATION OF HEALTH HAZARDS IN BUILDING M-9, DEFENSE PERSONNEL SUPPORT CENTER, PHILADELPHIA, PENNSYLVANIA, 8, 16 AND 21 MARCH 1972. (U)

DESCRIPTIVE NOTE: INDUSTRIAL HYGIENE SPECIAL STUDY (FINAL),
JUL 72 34P BISHOP,RONALD M. ;
REPT. NO. USAEHA-35-032-72

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR CONDITIONING EQUIPMENT, AIR POLLUTION), (*AIR POLLUTION, *BUILDINGS), CONTROLLED ATMOSPHERES, EXHAUST GASES, TEMPERATURE, HUMIDITY, DUST, CONTAMINATION, VENTILATION FANS, VENTS, INTERNAL COMBUSTION ENGINES, COMBUSTION PRODUCTS, WASTE GASES, HAZARDS, ODORS, AMMONIA, CARBON MONOXIDE, NITROGEN OXIDES, INDUSTRIAL MEDICINE, SAMPLING, PARTICLES, CONCENTRATION(CHEMISTRY), AIR FILTERS, PARTICLE SIZE, DISTRIBUTION, GAS FLOW (U)
IDENTIFIERS: FLOOR PLANS, HAZARDS, PUBLIC HEALTH, NITROGEN OXIDE(NO2) (U)

THIS SPECIAL STUDY WAS PERFORMED TO DETERMINE THE PRESENCE AND EXTENT OF ANY ADVERSE ENVIRONMENTAL CONDITIONS WHICH MAY RESULT IN A HEALTH HAZARD IN BLDG M-9. IT INCLUDED AN EVALUATION OF THE VENTILATION SYSTEMS AND MEASUREMENTS OF TEMPERATURE, HUMIDITY, DUSTINESS, LIGHTING AND INDOOR ATMOSPHERIC CONTAMINATION. THE VENTILATION SYSTEMS WERE NOT BALANCED AND A CROSS-CONTAMINATION, OF INTERNAL COMBUSTION ENGINE EXHAUST PRODUCTS, BETWEEN THE ADJACENT MAINTENANCE SHOP (BLDG 30) AND SECTION 3-F IS PROBABLE. ADDITIONALLY, THE DUST CONCENTRATION IN SECTION 3-F EXCEEDED THE EXTRAPOLATED DUSTINESS LIMIT. TEMPERATURE AND HUMIDITY REMAINED RELATIVELY CONSTANT. RECOMMENDATIONS ARE MADE TO REBALANCE THE VENTILATION SYSTEMS AND PREVENT ENGINE EXHAUST PRODUCTS AND ROOF DUST FROM ENTERING SECTION 3-F. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 906 628 17/8 19/7 21/8.2
GENERAL RESEARCH CORP ARLINGTON VA

ROCKET PLUME OPTICAL SIGNATURES. (U)

DESCRIPTIVE NOTE: FINAL REPT. 20 AUG 71-30 SEP 72.
OCT 72 124P
REPT. NO. GRC-CR-5-244
CONTRACT: DAHC60-70-C-0078

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH MCDONNELL DOUGLAS ASTRONAUTICS CO.- WEST, HUNTINGTON BEACH, CALIF.

DESCRIPTORS: (*COMBUSTION PRODUCTS, EMISSIVITY), (*ROCKETS, *EXHAUST GASES), (*SPECTRUM SIGNATURES, *COMPUTER PROGRAMS), SOLID PROPELLANT ROCKET ENGINES, HIGH ALTITUDE, PARTICLES, MATHEMATICAL MODELS, ALBEDO, SOLAR RADIATION, EXCITATION, EXOSPHERE, ELECTROMAGNETIC RADIATION, SCATTERING, PARTICLE SIZE, ALUMINA, GAS FLOW, SOLID ROCKET PROPELLANTS, ROCKET NOZZLES (U)
IDENTIFIERS: FLAME COMPUTER PROGRAM, *PLUMES(RADIATION), *ROCKET EXHAUST (U)

AS PART OF THE OPTICAL SIGNATURES PROGRAM, MCDONNELL DOUGLAS ASTRONAUTICS COMPANY- WEST HAS DEVELOPED THE INITIAL WORKING MODEL OF A CODE TO DESCRIBE THE GROSS FEATURES OF ROCKET-PLUME RADIATION FOR ALTITUDES ABOVE 75 N MI. THE MAIN EFFORT IS THE CONSTRUCTION OF A SCHEME FOR INTEGRATION OF AN ARBITRARY FUNCTION THROUGH AN ARBITRARY AXISYMMETRIC ROCKET PLUME, WITH ANY SPECIFIED LOOK ANGLE, PLUME DIRECTION, AND VEHICLE VELOCITY DIRECTION. RADIANCES ARE PRESENTED AS INTEGRATED VALUES IN A SPECIFIED SPECTRAL BAND. THE EQUATIONS USED AND A PRINTOUT OF THE CODE AND OF A SAMPLE APPLICATION ARE INCLUDED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 913 714 17/5 21/8.1 21/8.2 21/9.1
21/9.2
CALSPAN CORP BUFFALO N Y

PLUME INTERFERENCE ASSESSMENT AND MITIGATION. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JUN 73 66P MARRONE,P. V. ;
REPT. NO. CALSPAN-KC-5134-A-6
CONTRACT: DAHC60-69-C-0035

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXHAUST GASES, ROCKET ENGINES), (*COMBUSTION PRODUCTS, ROCKET ENGINES), (*INFRARED RADIATION, EXHAUST GASES), HIGH ALTITUDE, SIMULATION, ALTITUDE CHAMBERS, LIQUID PROPELLANT ROCKET ENGINES, SOLID PROPELLANT ROCKET ENGINES, INFRARED DETECTORS, DETECTORS, COMPATIBILITY, SIGNAL-TO-NOISE RATIO, PARTICLES, COLLECTING METHODS, MONOPROPELLANTS, BIPROPELLANTS, PERFORMANCE(ENGINEERING), ROCKET NOZZLES, BUTADIENES, HYDRAZINE, HYDRAZINE DERIVATIVES, NITROGEN OXIDES, HALOGENATED HYDROCARBONS, HALOGEN COMPOUNDS, SPECTROMETERS, ALUMINUM, AMMONIUM PERCHLORATE, INFRARED RADIATION, BOOSTER ROCKETS, ATTITUDE CONTROL SYSTEMS (U)
IDENTIFIERS: CARBOXY TERMINATED POLYMERS, CTPB PROPELLANT INGREDIENT, FAIR PROGRAM, FLY ALONG INFRARED, HTPB PROPELLANT INGREDIENT, HYDROXY TERMINATED POLYMERS, INFRARED RADIATION, LONG WAVELENGTHS, *PLUMES(RADIATION), POLYBUTADIENE/CARBOXY TERMINATED, POLYBUTADIENE/HYDROXY TERMINATED, SHORT WAVELENG (U)

THE PRIMARY PURPOSE OF THE ROCKET PLUME DIAGNOSTIC PROGRAM IS TO INVESTIGATE THE HIGH-ALTITUDE NEAR-FIELD RADIANCE SIGNATURE OF ROCKET MOTORS, AND TO DEVELOP THE DIAGNOSTIC TECHNIQUES REQUIRED TO CHARACTERIZE VARIOUS TYPES OF ROCKET PLUMES. THE DESIGN, CALIBRATION, AND INSTALLATION OF A COLD-OPTICS LWIR DETECTING SYSTEM ON ONE OF THE CALSPAN HIGH-ALTITUDE TEST CHAMBERS IS DISCUSSED. PARTICULATE FLUX MEASUREMENT TECHNIQUES ARE DISCUSSED, AND THE DESIGN AND DEVELOPMENT OF RESEARCH ROCKET MOTORS FOR USE WITH SPECIFIC PROPELLANT COMBINATIONS IS PRESENTED. A TEST PROGRAM FOR SMALL LIQUID AND SOLID THRUSTERS, SUCH AS THOSE PROPOSED FOR THE FAIR II PIE FLIGHT PROGRAM, HAS BEEN INITIATED, AND EXPERIMENTAL DATA FOR A MONOPROPELLANT HYDRAZINE THRUSTER ARE PRESENTED AND COMPARED WITH IR RADIANCE PREDICTIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 913 820 17/5 21/8.2 21/2 21/9.2
20/10
CALSPAN CORP BUFFALO N Y

ROCKET PLUME RADIATION DUE TO INTERACTIONS WITH THE ATMOSPHERE. VOLUME I. FAR FIELD PLUME RADIANCE MODEL. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
JUL 73 121P RIEGER,THOMAS J. ;BAUM,
HOWARD R. ;KOLB,CHARLES E. ;TAIT,KEVIN S. ;
GERMELES,APOSTOLOS E. ;
CONTRACT: DAHC60-69-C-0035

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH AERODYNE RESEARCH, INC., BURLINGTON, MASS., REPT. NO. ARI-RN-20-VOL-1. SEE ALSO VOLUME 3, AD-913 821L.

DESCRIPTORS: (*SOLID PROPELLANT ROCKET ENGINES, EXHAUST GASES), (*INFRARED DETECTORS, SOLID PROPELLANT ROCKET ENGINES), (*MOLECULAR SPECTROSCOPY, EXHAUST GASES), (*DIATOMIC MOLECULES, INTERACTIONS), (*INFRARED SPECTROSCOPY, HIGH ALTITUDE), SOLID ROCKET PROPELLANTS, COMBUSTION PRODUCTS, GUIDED MISSILE WARHEADS, HYPERSONIC FLOW, EXCITATION, HYDROGEN COMPOUNDS, EMISSIVITY, FLUORIDES, MOLECULAR ENERGY LEVELS, OXYGEN, WAKE, MOLECULAR ROTATION, CHLORIDES, ATMOSPHERE ENTRY, REENTRY VEHICLES, INFRARED RADIATION, HYDROXIDES, INTENSITY, QUANTUM STATISTICS, MATHEMATICAL PREDICTION, CONTINUUM MECHANICS, FLOW FIELDS, HELIUM, REACTION KINETICS, HYDROGEN, RAREFIED GAS DYNAMICS, APPROXIMATION(MATHEMATICS) (U)
IDENTIFIERS: BGK APPROXIMATION, COLLISIONS, MOLECULES, *PLUMES(RADIATION) (U)

CALCULATIONS ARE PRESENTED THAT ARE ELEMENTS OF A MODEL TO PREDICT THE IR RADIATION EMITTED BY HIGH-ALTITUDE ROCKET PLUMES, BECAUSE OF THE INTERACTION OF THE PLUME GASES WITH THE AMBIENT ATMOSPHERE. A MODEL OF PLUME RADIANCE IS PRESENTED, APPROPRIATE TO HIGH ALTITUDES WHERE THE AVERAGE TIME BETWEEN PLUME AND ATMOSPHERIC SPECIES COLLISIONS IS GREATER THAN THE RADIATIVE LIFETIMES OF THE RELEVANT EXCITED MOLECULAR STATES. THE THREE PARTS OF THE CALCULATIONS - FLOW FIELD DENSITY, MOLECULAR COLLISIONAL EXCITATION, AND MOLECULAR NONEQUILIBRIUM RADIATION - ARE IDENTIFIED AND DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 913 821 17/5 21/8.2 21/2 21/9.2
20/6

CALSPAN CORP BUFFALO N Y

ROCKET PLUME RADIATION DUE TO INTERACTIONS WITH THE ATMOSPHERE. VOLUME III. PLUME RADIANCE PREDICTIONS FOR ATHENA H SECOND AND THIRD STAGE BOOSTERS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
JUL 73 18P RIEGER,THOMAS J. ;WORSTER,
BRUCE W. ;MORAN,JAMES P. ;
CONTRACT: DAHC60-69-C-0035

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH AERODYNE RESEARCH, INC., BURLINGTON, MASS., REPT. NO. ARI-RN-20-VOL-3. SEE ALSO VOLUME 1, AD-913 820L.

DESCRIPTORS: (*SOLID PROPELLANT ROCKET ENGINES, EXHAUST GASES), (*INFRARED DETECTORS, SECOND-STAGE MOTORS), (*COMBUSTION PRODUCTS, ATMOSPHERE ENTRY), (*INFRARED SPECTROSCOPY, ALUMINA), (*SOLID ROCKET PROPELLANTS, ALUMINUM COMPOUNDS), RADIOMETERS, TEMPERATURE, INTENSITY, INFRARED RADIATION, STAGING, THRUST, MOLECULAR SPECTROSCOPY, ALTITUDE, EMISSIVITY, HYPERSONIC TEST VEHICLES, MATHEMATICAL PREDICTION, OPTICAL TRACKING, INTERACTIONS, AIR, REENTRY VEHICLES, WAKE, GUIDED MISSILE WARHEADS, CARBON DIOXIDE, CARBON MONOXIDE, WATER VAPOR, HYDROGEN, NITROGEN, HYDROGEN COMPOUNDS, CHLORIDES (U)
IDENTIFIERS: ATHENA, EMISSION SPECTRA, *PLUMES(RADIATION), TRIOXIDES (U)

PREDICTIONS OF THE PLUME RADIANCE AND RADIANT INTENSITY IN THE INFRARED WERE MADE FOR THE PLUMES PRODUCED BY ATHENA H SECOND AND THIRD STAGES. PREDICTIONS OF BOTH THE RADIANCE DUE TO EMISSION FROM THE ALUMINA PARTICLES PRODUCED BY THESE SOLID PROPELLANT ENGINES WERE CALCULATED. FOR BOTH STAGES IT WAS FOUND THAT THE EMISSION FROM THE ALUMINA PARTICLES COMPLETELY DOMINATED THE GASEOUS EMISSION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A000 202 13/2
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE VA

THE PROBLEM OF PREVENTING VEHICULAR AIR POLLUTION AND METHODS OF SOLUTION. (U)

SEP 74 13P
REPT. NO. FSTC-HT-23-897-73

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF AVTOMOBILNAYA PROMYSHLENNOST (USSR) N8 P9-13 1972.

DESCRIPTORS: *AIR POLLUTION, *EXHAUST GASES, VEHICLES, TRANSLATIONS, USSR (U)
IDENTIFIERS: AUTOMOBILE EXHAUST, AIR POLLUTION ABATEMENT, *AIR POLLUTION CONTROL, AIR POLLUTION CONTROL EQUIPMENT (U)

THE REPORT DISCUSSES VEHICULAR AIR POLLUTION IN THE USSR AND VARIOUS CONTROL STRATEGIES AND EQUIPMENT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A001 564 13/2 1/5
ARGONNE NATIONAL LAB ILL ENERGY AND ENVIRONMENTAL SYSTEMS DIV

AIRPORT VICINITY AIR POLLUTION STUDY. MODEL APPLICATION AND VALIDATION AND AIR QUALITY IMPACT ANALYSIS AT WASHINGTON NATIONAL AIRPORT. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JUL 74 211P WANG,I. T. ;ROTE,D. M. ;
CONLEY,L. A. ;
CONTRACT: DOT-FA71WAI-223
MONITOR: FAA-RD 74-132

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-789 049.

DESCRIPTORS: *AIRPORTS, *AIR POLLUTION, DISPERSIONS, COMPUTERIZED SIMULATION, AIR QUALITY, DISTRICT OF COLUMBIA, MODELS, DATA PROCESSING, EXHAUST GASES, COMPUTER PROGRAMMING, CARBON MONOXIDE, NITROGEN OXIDES, HYDROCARBONS, PARTICLES, AIR TRAFFIC (U)
IDENTIFIERS: AIRCRAFT EXHAUST, *AIR QUALITY DATA, *WASHINGTON NATIONAL AIRPORT, ATMOSPHERIC DIFFUSION, MOTOR VEHICLES (U)

THE REPORT DESCRIBES A NEW VERSION OF THE AIRPORT VICINITY AIR POLLUTION MODEL (AVAP MODEL) DEVELOPED BY THE ENERGY AND ENVIRONMENTAL SYSTEMS DIVISION OF ARGONNE NATIONAL LABORATORY. THE NEW AVAP MODEL FEATURES A SIMPLIFIED AND GENERALIZED INPUT STRUCTURE AS WELL AS A BUILT-IN AIRPORT EMISSIONS COMPUTATIONAL PACKAGE. APPLICATION AND VALIDATION OF THE MODEL HAVE BEEN CARRIED OUT USING THE AIRPORT ACTIVITY AND AIR QUALITY DATA COLLECTED AT WASHINGTON NATIONAL AIRPORT. A DETAILED ACCOUNT OF THIS EFFORT IS GIVEN. THE PRESENT REPORT ALSO INCLUDES AN ANALYSIS OF THE IMPACT ON AIR QUALITY IN THE VICINITY OF WASHINGTON NATIONAL AIRPORT OF AIRPORT-RELATED POLLUTANT EMISSIONS USING THE AVAP MODEL. THE AIR QUALITY IMPACT IS EVALUATED BY COMPARING THE COMPUTED AIR QUALITY CONCENTRATIONS WITH THE APPROPRIATE FEDERAL AIR QUALITY STANDARDS FOR A VARIETY OF COMBINATIONS OF AIRPORT ACTIVITY AND METEOROLOGICAL CONDITIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A001 728 21/5
AVCO LYCOMING DIV STRATFORD CONN

PLT 27 GAS TURBINE ENGINE EXHAUST EMISSION AND NOISE MEASUREMENTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 21 MAY-31 DEC 73,
SEP 74 111P RUBINS,PHILIP M. ;AUERBACH,
EDWARD ;DEMAN,JOCHEN A. ;
REPT. NO. LYC-74-7
CONTRACT: DAAJ02-73-C-0068
PROJ: DA-1-G-162204-AA-71
TASK: 1-G-162204-AA-7110
MONITOR: USAAMRDL TR-74-61

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: *TURBOSHAFT ENGINES, *EMISSION, *EXHAUST GASES, AIRCRAFT ENGINES, AIR POLLUTION, NOISE POLLUTION, NOISE POLLUTION, ACOUSTIC MEASUREMENT (U)
IDENTIFIERS: *PLT 27 GAS TURBINES, JET ENGINE EXHAUST, SMOKE NUMBER (U)

PLT 27 GAS TURBINE ENGINE EXHAUST GAS AND NOISE WERE MEASURED AND ANALYZED. THE RESULTS OF THE EXHAUST GAS EMISSION ANALYSIS SHOW THAT THE EXHAUST GASES HAVE A LOW CONTENT OF UNBURNED COMBUSTION PRODUCTS, I.E., HYDROCARBONS AND CARBON MONOXIDE, DOWN TO IDLE POWER DUE TO THE HIGH COMBUSTION EFFICIENCY OF THIS ENGINE. THE COMBUSTION EFFICIENCY IS 99.5 PERCENT AT IDLE AND 99.9 PERCENT ABOVE 10 PERCENT OF MAXIMUM-RATED POWER. THE SMOKE NUMBERS OF THE PLT 27 ENGINE ARE EXTREMELY LOW. NO VISIBLE SMOKE WAS PRODUCED AT ANY POWER SETTING WITH ANY OF THE INJECTOR SYSTEMS TESTED. THE PLT 27 ENGINE MEETS THE EXHAUST GAS EMISSION STANDARDS SET BY THE EPA FOR 1979 FOR FIXED-WING AIRCARFT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A001 730 21/5 13/2
ZWICK CO SANTA ANA CALIF

DEVELOPMENT OF A LOW EMISSION COMBUSTION SYSTEM FOR THE MERDC 10 KW TURBO-ALTERNATOR. (U)

DESCRIPTIVE NOTE: REPT. NO. 2(FINAL), MAY 74 135P ZWICK,E. B. ;BOTTOS,R. D. ;
CONTRACT: DAAK02-73-C-0001

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: *AIR POLLUTION, *COMBUSTORS, *GAS TURBINES, COMBUSTION, EMISSION, BURNERS, FUEL SYSTEMS, VAPORIZATION, HYDROCARBONS, CARBON MONOXIDE, NITROGEN OXIDES, FEASIBILITY STUDIES, FABRICATION, MEASUREMENT, FIELD TESTS, TABLES(DATA), ENGINEERING DRAWINGS (U)
IDENTIFIERS: AIR POLLUTION CONTROL, *TURBOALTERNATORS, DESIGN (U)

THIS REPORT COVERS THE FIRST PHASE OF A PROGRAM TO DEMONSTRATE THE FEASIBILITY OF A LOW EMISSION COMBUSTION SYSTEM FOR THE MERDC 10 KW TURBOALTERNATOR. EMISSIONS FOR THE TURBOALTERNATOR WITH ITS ORIGINAL BURNER WERE FOUND TO BE VERY HIGH. EMISSIONS FROM THE TURBOALTERNATOR WITH A SPECIAL ZWICK BURNER WERE DECREASED TO VERY LOW VALUES. TYPICAL RESULTS ARE SHOWN. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A001 874 13/10 13/2
TRANSPORTATION SYSTEMS CENTER CAMBRIDGE MASS

MARINE ENGINE-EXHAUST EMISSIONS TEST CELL. (U)

DESCRIPTIVE NOTE: INTERIM REPT. JAN-DEC 73,
NOV 74 67P KLAUBERT,EARL C. ;WALTER,
ROBERT A. ;
REPT. NO. DOT-TSC-USCG-74-2
MONITOR: USCG D-27-75

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO NOV 73, AD-769 455.

DESCRIPTORS: *MARINE SURFACE PROPULSION, *MOTORS, EMISSION, EXHAUST SYSTEMS, AIR POLLUTION, COMBUSTION PRODUCTS, POLLUTANTS, NOISE REDUCTION (U)
IDENTIFIERS: *OUTBOARD MOTORS, *EXHAUST EMISSIONS (U)

A MARINE ENGINE EXHAUST EMISSIONS TEST CELL FOR BOAT-SIZE DIESEL ENGINES (APPROX. 200 HP) AND OUTBOARD ENGINES WAS CONSTRUCTED AS PART OF A PROJECT SPONSORED BY THE UNITED STATES COAST GUARD FOR THE MONITORING AND CONTROL OF EMISSIONS FROM MARINE SOURCES. THIS REPORT DESCRIBES THE SALIENT FEATURES OF THE CELL INCLUDING ITS STRUCTURAL ASPECTS AND NOISE ATTENUATING CAPABILITIES. THE ENGINE TYPES TO BE TESTED ARE BRIEFLY OUTLINED. THE POWER TRAIN FOR TESTING OUTBOARD MOTORS ALONG WITH THE INSTRUMENTATION ASSEMBLED FOR MONITORING AND CONTROLLING THE VARIOUS TEST ENGINE OPERATING PARAMETERS ARE DISCUSSED IN DETAIL. TECHNIQUES FOR HANDLING THE OUTBOARD ENGINE-EXHAUST EMISSION GAS SAMPLE AND THE INSTRUMENTATION FOR EMISSION MEASUREMENTS ARE DESCRIBED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A002 510 4/1 6/6
STANFORD RESEARCH INST MENLO PARK CALIF

STRATOSPHERIC ELECTRICITY. (U)

DESCRIPTIVE NOTE: SCIENTIFIC NOTE B,
74 9P HAKE,R. D. , JR;PIERCE,E.
T. ;
CONTRACT: N00014-74-C-0134
PROJ: SRI-3062

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN INTERNATIONAL CONFERENCE
ON THE ENVIRONMENTAL IMPACT OF AEROSPACE OPERATIONS
IN THE HIGH ATMOSPHERE (2ND) PREPRINT VOLUME,
P47-52, 8-10 JUL 74.
SUPPLEMENTARY NOTE:

DESCRIPTORS: *ATMOSPHERIC ELECTRICITY,
*STRATOSPHERE, AIR POLLUTION, AEROSOLS, PARTICLE
SIZE, ION DENSITY, RECOMBINATION REACTIONS,
CONDENSATION NUCLEI, VOLCANOES, METEOROLOGICAL
DATA, SUPERSONIC TRANSPORTS, EXHAUST GASES,
EXPERIMENTAL DATA, MATHEMATICAL PREDICTION,
REPRINTS (U)
IDENTIFIERS: ENVIRONMENTAL IMPACT, AITKEN
NUCLEI (U)

THE MAIN FEATURES OF STRATOSPHERIC ELECTRICITY, AS
DERIVED FROM EXPERIMENTAL DATA, ARE SUMMARIZED. IT
IS SHOWN THAT THE AGREEMENT BETWEEN EXPERIMENTAL
OBSERVATIONS AND THEORETICAL PREDICTIONS IS IMPROVED
WHEN THE INFLUENCE OF STRATOSPHERIC AEROSOLS IS
CONSIDERED. VARIOUS COMBINATIONS OF AEROSOL NUMBER
DENSITY AND RADIUS CAN EXPLAIN THE OBSERVED EFFECTS.
HOWEVER, THE MOST PROBABLE EXPLANATION INVOLVES
AITKEN NUCLEI (RADIUS <0.1 MICRON AT DENSITIES
RANGING FROM 100 TO 1000/CC. DENSITIES OF THESE
ORDERS ARE LIKELY BOTH TO BE PRESENT NATURALLY AND TO
BE PRODUCED BY THE OPERATION OF A FLEET OF SUPERSONIC
TRANSPORTS (SSTS). (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A003 335 13/2 21/4 21/7 11/8
SOUTHWEST RESEARCH INST SAN ANTONIO TEX ARMY FUELS AND LUBRICANTS RESEARCH LAB

STUDY AND EVALUATION IN THE FIELD OF ENVIRONMENTAL POLLUTION RELATED TO THE UTILIZATION OF ARMY MATERIEL. (U)

DESCRIPTIVE NOTE: FINAL SUMMARY REPT. OCT 74 36P
REPT. NO. AFLRL-50
CONTRACT: DAAD05-72-C-0053

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: *AUTOMOTIVE FUELS, *ARMY RESEARCH, *LUBRICATING OILS, *INTERNAL COMBUSTION ENGINES, *AIR POLLUTION, SCIENTIFIC RESEARCH, EXHAUST GASES, CHEMICAL COMPOSITION, GASOLINE, DIESEL FUELS, ROTARY COMBUSTION ENGINES, MILITARY VEHICLES, PERFORMANCE(ENGINEERING), CHEMICAL ANALYSIS, SEALED SYSTEMS, LUBRICATION (U)
IDENTIFIERS: AIR POLLUTION CONTROL, AIR POLLUTION ABATEMENT, WATER INJECTION (U)

FOR THE PAST THREE YEARS, THE U.S. ARMY FUELS AND LUBRICANTS RESEARCH LABORATORY HAS BEEN ENGAGED IN A PROGRAM OF RESEARCH ON EMISSION-RELATED PHENOMENA. ACTIVITIES WITHIN THE SEVERAL PHASES OF THIS WORK HAVE BEEN QUITE DIVERSE, AND, CONSEQUENTLY, THE NUMEROUS PAPERS, REPORTS, AND OTHER DOCUMENTS DETAILING SPECIFIC FINDINGS HAVE BEEN DISTRIBUTED THROUGH A VARIETY OF ARMY AND PROFESSIONAL SOCIETY ORGANIZATIONAL CHANNELS. IT IS THE PURPOSE OF THIS FINAL SUMMARY REPORT TO PROVIDE: AN OVERVIEW OF THE PROGRAM PHASES, EMPHASIZING THE OBJECTIVE, APPROACH, AND ACCOMPLISHMENTS OF EACH; AND ADEQUATE REFERENCE GUIDELINES (BIBLIOGRAPHY) TO PERMIT THE READER DESIRING GREATER DETAIL TO QUICKLY SECURE THE APPROPRIATE PUBLICATION. PROJECTS INCLUDE FUEL, ENGINE, LUBRICANT, AND ANALYTICAL RESEARCH, AND POLLUTION CONTROL LIASON. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A003 627 14/2 7/3 21/5
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

CRYOGENIC SAMPLING OF TURBINE ENGINE EXHAUST. (U)

DESCRIPTIVE NOTE: PROGRESS REPT. MAY-DEC 73,
NOV 74 13P CONCKLE,JAMES P. ;LACKEY,
WILLIAM W. ;MILLER,RICHARD L. ;
REPT. NO. SAM-TR-74-54
PROJ: AF-7164
TASK: 716416

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, *GAS TURBINES, ORGANIC COMPOUNDS, CRYOGENICS, SAMPLING, CHEMICAL COMPOSITION, JET ENGINE FUELS (U)
IDENTIFIERS: *GAS SAMPLING, *COLD TRAPS, AIRCRAFT EXHAUST (U)

A MULTISTAGE CRYOGENIC TRAPPING SYSTEM WAS USED TO SAMPLE AND CONCENTRATE ORGANIC CONSTITUENTS FROM TURBINE ENGINE COMBUSTOR EXHAUST. ANALYSES WERE CONDUCTED BY A GAS CHROMATOGRAPH-MASS SPECTROMETER COUPLED WITH A DATA ACQUISITION SYSTEM. A 30-MINUTE SAMPLE COLLECTION, ALTHOUGH INADEQUATE FOR QUANTITATIVE ANALYSIS OF INDIVIDUAL COMPOUNDS, SHOWED SIGNIFICANT DIFFERENCES IN THE CHARACTER OF ORGANIC COMPOUNDS IN T-56 COMBUSTOR EXHAUST BETWEEN NEAT FUELS AND FUELS CONTAINING ORGANOMETALLIC SMOKE-ABATEMENT ADDITIVES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A003 648 7/4 7/2
AVCO EVERETT RESEARCH LAB INC EVERETT MASS

FIELD TESTS OF A LASER RAMAN MEASUREMENT SYSTEM FOR AIRCRAFT ENGINE EXHAUST EMISSIONS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
OCT 74 179P LEONARD,DONALD A. ;
CONTRACT: F33615-71-C-1875
PROJ: AF-3066
MONITOR: AFAPL TR-74-100

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, *GAS DETECTORS, RAMAN SPECTRA, FLUORESCENCE, GAS ANALYSIS, CARBON MONOXIDE, CARBON DIOXIDE, NITROGEN OXIDES, HYDROCARBONS, SMOKE, CALIBRATION, GAS TURBINES, EMISSION SPECTRA, EXPERIMENTAL DESIGN (U)
IDENTIFIERS: *AIRCRAFT EXHAUST, *LASER RAMAN SPECTROSCOPY, LASER INDUCED FLUORESCENCE, PERFORMANCE EVALUATION, SPECTROSCOPIC ANALYSIS (U)

LASER INDUCED RAMAN AND FLUORESCENCE MEASUREMENTS WERE MADE IN THE EXHAUST OF A T53-L13A GAS TURBINE ENGINE WITH A NEW FIELD PORTABLE INSTRUMENT DEVISED SPECIFICALLY FOR GAS TURBINE EXHAUST EMISSION MEASUREMENTS. THE GAS TURBINE EXHAUST WAS ANALYZED BY CONVENTIONAL INSTRUMENTS FOR CO, CO2, NO, NOX, TOTAL HYDROCARBONS, SMOKE AND TEMPERATURE, AND THESE DATA WERE USED AS A 'CALIBRATION' STANDARD FOR THE EVALUATION OF THE LASER RAMAN INSTRUMENT. THE MOST SEVERE PROBLEM AREA WAS LASER INDUCED HYDROCARBON FLUORESCENCE WHEN THE EXHAUST CONTAINED LARGE TOTAL HYDROCARBON CONCENTRATIONS. THE OVERALL CONCLUSION WAS THAT THE LASER RAMAN METHOD SHOWS A GOOD POTENTIAL FOR AIRCRAFT GAS TURBINE EMISSION ANALYSIS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A004 039 20/4 21/5

LOCKHEED MISSILES AND SPACE CO INC HUNTSVILLE ALA
HUNTSVILLE RESEARCH AND ENGINEERING CENTER

REVIEW OF EDDY VISCOSITY MODELS FOR JET ENGINE EXHAUST/AIR MIXING, (U)

JUN 72 50P AUDEH, BEVERLY J. ;

REPT. NO. LMSC/HREC-D225588, HREC/1251-1

CONTRACT: DAAH01-71-C-1251

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: *JET ENGINES, *EXHAUST GASES, *JET MIXING FLOW, AXIALLY SYMMETRIC FLOW, TURBULENCE, PLUMES, TURBULENT FLOW, MATHEMATICAL MODELS (U)

IDENTIFIERS: *EDDY VISCOSITY (U)

VARIOUS EDDY VISCOSITY MODELS USED FOR THE ANALYTICAL DESCRIPTION OF FREE MIXING OF JET FLOWS WERE EVALUATED WITH PARTICULAR REGARD TO JET EXHAUST/ ATMOSPHERE MIXING PROBLEMS. THE EDDY VISCOSITY MODELS REVIEWED WERE THOSE OF PRANDTL, FERRI, SCHETZ UNIFIED, DONALDSON AND GRAY, TING-LIBBY, COHEN KINEMATIC, AND TURBULENT KINETIC ENERGY. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A005 077 21/4 13/2 21/7
SOUTHWEST RESEARCH INST SAN ANTONIO TEX ARMY FUELS AND LUBRICANTS RESEARCH LAB

AN INVESTIGATION OF DIESEL FUEL COMPOSITION-EXHAUST EMISSION RELATIONSHIPS. (U)

DESCRIPTIVE NOTE: INTERIM REPT.,
OCT 74 23P TYLER,JOHN C. ;GRAY,J. T. ;WEATHERFORD,W. D. , JR;
REPT. NO. AFLRL-42
CONTRACT: DAAD05-72-C-0053

UNCLASSIFIED REPORT

DESCRIPTORS: *DIESEL FUELS, NITROGEN OXIDES, AROMATIC HYDROCARBONS, FUEL ADDITIVES, HYDROCARBONS, CHEMICAL COMPOSITION, EXHAUST GASES, CETANE NUMBER (U)
IDENTIFIERS: *DIESEL ENGINE EXHAUST (U)

THE PRESENT INVESTIGATION HAS BEEN CONDUCTED TO STUDY THE EFFECTS OF HYDROCARBON COMPOSITION AND ADDITIVE CONTENT OF DIESEL FUELS ON EXHAUST POLLUTANT EMISSIONS. THE REPORTED RESULTS WERE OBTAINED USING A TWO-CYLINDER, FOUR-STROKE CYCLE ONAN DIESEL ENGINE-GENERATOR UNIT INSTRUMENTED FOR EXHAUST EMISSIONS MEASUREMENTS. SEVEN DIFFERENT FUELS AND FUEL BLENDS HAVING AROMATIC CONTENTS VARYING FROM 0 TO 74 PERCENT AND CETANE NUMBERS FROM 37 TO 71 WERE INVESTIGATED. THE RESULTS OF THIS STUDY DEMONSTRATE THAT INCREASING CONCENTRATIONS OF AROMATIC HYDROCARBONS IN THE FUEL SIGNIFICANTLY INCREASE EMISSION OF OXIDES OF NITROGEN WHILE SLIGHTLY DECREASING THE EMISSION OF UNBURNED HYDROCARBONS, WHILE OTHER FUEL CHARACTERISTICS, INCLUDING CETANE NUMBER, REMAIN ESSENTIALLY CONSTANT. A FULL-SCALE, SIX-CYLINDER MILITARY ENGINE (LDT-465) WAS USED TO VERIFY THE AROMATICS VS NOX RELATIONSHIP OBTAINED WITH THE ONAN MOTOR-GENERATOR UNIT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A005 458 4/1 13/2
DEPARTMENT OF TRANSPORTATION WASHINGTON D C SYSTEMS DEVELOPMENT AND TECHNOLOGY

REPORT OF FINDINGS. THE EFFECTS OF STRATOSPHERIC POLLUTION BY AIRCRAFT. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 74 836P GROBECKER,A. J. ;CORONITI, S. C. ;CANNON,R. H. , JR;
REPT. NO. DOT-TST-75-50

UNCLASSIFIED REPORT

DESCRIPTORS: *STRATOSPHERE, *AIR POLLUTION, ATMOSPHERIC CHEMISTRY, EXHAUST GASES, TROPOSPHERE, SUPERSONIC TRANSPORTS, CLIMATE, GEOPHYSICS, BIOSPHERE, ULTRAVIOLET RADIATION, AIRCRAFT (U)
IDENTIFIERS: *AIRCRAFT EXHAUST, *CLIMATIC CHANGES, AIR POLLUTION EFFECTS(PLANTS), AIR POLLUTION EFFECTS(ANIMALS), ECONOMIC ANALYSIS, DOT/5C, DOT/4DZ/DA (U)

THE REPORT ASSESSES THE IMPACT OF CLIMATIC CHANGES WHICH MAY OCCUR FROM OPERATION OF AIRCRAFT IN THE STRATOSPHERE. THE EFFECTS CONSIDERED INVOLVE THE GEOPHYSICS OF THE STRATOSPHERE AND TROPOSPHERE, THE PROPULSION EFFULENTS, THE IMPACTS OF CLIMATIC CHANGE ON THE BIOSPHERE, AND THE ECONOMIC AND SOCIAL MEASURES OF BIOLOGICAL CLIMATIC CHANGE. INCLUDED AND DISCUSSED ARE REMEDIAL MEASURES BY WHICH ADVERSE ENVIRONMENTAL EFFECTS MAY BE AVOIDED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A006 239 13/2 1/2
AIR FORCE WEAPONS LAB KIRTLAND AFB N MEX

USAF AIRCRAFT POLLUTION EMISSION FACTORS AND LANDING AND TAKEOFF (LTO) CYCLES. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUN-1 NOV 74, FEB 75 48P NAUGLE,DENNIS F. ;NELSON, STEVEN R. ;
REPT. NO. AFWL-TR-74-303

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED OCT 74, AD/A-001 826.

DESCRIPTORS: *AIR POLLUTION, *MILITARY FACILITIES, *JET AIRCRAFT, *TAKEOFF, EMISSION CONTROL, LANDING, FLIGHT MANEUVERS, AIRCRAFT ENGINES, HYDROCARBONS, AIR TRAFFIC, NITROGEN OXIDES, CARBON MONOXIDE, TABLES(DATA) (U)

ANALYSIS OF TOTAL POLLUTION EMISSIONS FROM USAF AIRCRAFT REQUIRES BASIC DATA SUCH AS AIRCRAFT ENGINE POLLUTION EMISSION FACTORS AND LANDING AND TAKEOFF (LTO) TIME-IN-MODES. THE REPORT UPDATES THE LIST OF MEASURED POLLUTION EMISSION FACTORS SPECIFIC TO EACH MAJOR USAF AIRCRAFT ENGINE TYPE. RESULTS OF ORIGINAL RESEARCH TO DEFINE USAF LTO CYCLE TIMES FOR NINE OPERATIONAL MODES PER AIRCRAFT TYPE ARE PRESENTED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A006 290 21/5 13/2
NAVAL AIR PROPULSION TEST CENTER TRENTON N J

EFFECT OF SMOKELESS COMBUSTORS ON PARTICULATES FROM J52 AND TF30 ENGINES. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
JAN 75 32P HORLING,JAMES E. ;
REPT. NO. NAPTC-PE-48
PROJ: NAEC-PO-4-8012

UNCLASSIFIED REPORT

DESCRIPTORS: *GAS TURBINES, *PARTICLES, *EXHAUST GASES, *COMBUSTORS, CONCENTRATION(COMPOSITION) (U)
IDENTIFIERS: J-52-P-8B ENGINES, J-52-P-6B ENGINES, J-52-P-408 ENGINES, F-30 ENGINES, TF-30-P-6C ENGINES, TF-30-P-408 ENGINES, TF-30 ENGINES, J-52 ENGINES, *JET ENGINE EXHAUST, SMOKELESS COMBUSTORS, AIR POLLUTION CONTROL (U)

PARTICULATE SAMPLES USING A MODIFIED LA SAMPLING TRAIN WERE OBTAINED FROM FIVE J52-P-8B, THREE J52-P-6B AND ONE EACH OF J52-P-408, TF30-P-6C AND TF30-P-408 GAS TURBINE ENGINES. THE SAMPLES OBTAINED WERE DIVIDED INTO SOLID PARTICULATES, SOLVENT SOLUBLE MATERIAL AND WATER SOLUBLE MATERIAL. RESULTS INDICATE THAT SMOKELESS COMBUSTORS IN THE J52 ENGINE REDUCE PARTICULATES BY 20%. RESULTS OF TF30 TESTS ARE INCONCLUSIVE BECAUSE OF LIMITED SAMPLING. THE IMPACT OF SMOKELESS COMBUSTOR ON STATIONARY SOURCE REGULATIONS WAS ALSO ASSESSED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A006 802 21/2 13/2
AIR FORCE WEAPONS LAB KIRTLAND AFB N MEX

ENVIRONMENTAL ANALYSIS OF POSSIBLE SULFUR INCREASES IN USAF JET FUELS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
FEB 75 22P NAUGLE,DENNIS F. ;
REPT. NO. AFWL-TR-74-215
PROJ: AF-2103

UNCLASSIFIED REPORT

DESCRIPTORS: *JET ENGINE FUELS, *AIR POLLUTION, *SULFUR OXIDES, *COMBUSTION PRODUCTS, STANDARDS, SULFUR, CHEMICAL COMPOSITION, COSTS, ENVIRONMENTS, AIR FORCE PROCUREMENT, FEASIBILITY STUDIES, TURBOJET ENGINES, OXIDATION (U)
IDENTIFIERS: JET ENGINE EXHAUST, JP-4 FUEL, AIR POLLUTION STANDARDS (U)

THIS ANALYSIS ADDRESSES THE QUESTION OF WHETHER ENVIRONMENTAL CONSIDERATIONS SHOULD BE THE LIMITING CONSTRAINT TO POSSIBLE INCREASES IN SULFUR CONTENT OF USAF JET FUELS. SUCH INCREASES ARE PROPOSED IN ORDER TO INCREASE THE AVAILABILITY OF JET FUELS SUCH AS JP-4. THE CURRENT AVERAGE SULFUR CONTENT OF 0.05% BY WEIGHT AND TWO HYPOTHESIZED LEVELS OF 0.4 PERCENT AND 1.0 PERCENT ARE ANALYZED IN THIS STUDY. AIRCRAFT EMISSIONS AND METEOROLOGICAL CONDITIONS AROUND AN AIRBASE ARE MAXIMIZED TO PRODUCE PREDICTED 'WORST-CASE' AMBIENT AIR QUALITY LEVELS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A006 807 13/2
AIR FORCE WEAPONS LAB KIRTLAND AFB N MEX

A GENERALIZED AIR QUALITY ASSESSMENT MODEL FOR AIR FORCE OPERATIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 MAY 73-1 NOV 74, FEB 75 170P ROTE,DONALD M. ;WANGEN, LAWRENCE E. ;
REPT. NO. AFWL-TR-74-304

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED BY ARGONNE NATIONAL LAB., ILL.

DESCRIPTORS: *AIR QUALITY, *AIR FORCE OPERATIONS, AIR POLLUTION, MILITARY FACILITIES, ASSESSMENT, MATHEMATICAL MODELS, COMPUTER PROGRAMMING, DISTRIBUTION, PREDICTIONS, METEOROLOGICAL DATA, HYDROCARBONS, EXHAUST GASES, DIURNAL VARIATIONS, SOURCES, CONCENTRATION(CHEMISTRY) (U)
IDENTIFIERS: *AIR POLLUTION ABATEMENT, *ENVIRONMENTAL IMPACTS (U)

THE AIR QUALITY ASSESSMENT MODEL (AQAM) IS DESIGNED TO SERVE AS A GENERALIZED MODEL THAT CAN BE USED TO ASSESS THE IMPACT OF AIR FORCE OPERATIONS ON THE AIR ENVIRONMENT AT THE AIR BASE LEVEL. THIS DOCUMENT CONSTITUTES THE TECHNICAL REPORT TO THIS EFFORT AND, AS SUCH, CONTAINS A DISCUSSION OF THE METHODOLOGIES INCORPORATED INTO THE COMPUTER PROGRAMS FOR THE COMPUTATION OF POLLUTANT EMISSIONS AND THE SUBSEQUENT DISPERSAL OF THESE POLLUTANTS IN THE AMBIENT AIR. SIMULATION OF AIRCRAFT OPERATIONS, TEMPORAL AND SPATIAL MODELING OF POLLUTANT EMISSIONS, DISPERSION MODELS BASED ON THE GAUSSIAN PLUME FORMULATION AND OTHER SUBJECTS GERMANE TO THE MODEL ARE DISCUSSED. THE PROGRAM CONTAINS A SHORT-TERM DISPERSION MODEL FOR HOURLY CALCULATIONS AND A CLIMATOLOGICAL TYPE MODEL BASED ON THE 'AIR QUALITY DISPLAY MODEL' FOR LONG-TIME AVERAGE CONCENTRATION CALCULATIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A008 088 6/20 13/2
SOUTHWEST RESEARCH INST SAN ANTONIO TEX ARMY FUELS AND LUBRICANTS RESEARCH LAB

TOXICITY OF ENGINE EXHAUST GASES DIESEL-BROMOCHLOROMETHANE FUEL BLEND. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
FEB 75 38P JOHNSTON,ALAN A. ;SPRINGER, KARL ;JOHNSON,DON ;BOENIG,DENNIS ;NEWMAN, FRANK ;
REPT. NO. AFLRL-51
CONTRACT: DAAD05-72-C-0053

UNCLASSIFIED REPORT

DESCRIPTORS: *TOXICOLOGY, *HALOGENATED HYDROCARBONS, *DIESEL FUELS, *EXHAUST GASES, HYDROCARBONS, BROMINE COMPOUNDS, CHLORINE COMPOUNDS, DIESEL ENGINES, FUEL ADDITIVES, HISTOLOGY, PATHOLOGY, BIOASSAY, LABORATORY ANIMALS, COMBUSTION PRODUCTS, AIR POLLUTION (U)
IDENTIFIERS: *METHANE/BROMO-CHLORO, *BROMOHYDROCARBONS, *CHLOROHYDROCARBONS (U)

A SINGLE CYLINDER DIESEL ENGINE WAS USED TO GENERATE EXHAUST GASES FORMED DURING THE COMBUSTION OF DIESEL FUEL CONTAINING FIVE PERCENT BY VOL BROMOCHLOROMETHANE, AS A FUEL ADDITIVE. AN EXHAUST GAS DILUTION SYSTEM PERMITTED EXPOSURE OF SELECTED ANIMAL SPECIES TO THE PRODUCTS OF COMBUSTION DILUTED WITH FRESH AIR AT AIR/GAS RATIOS OF 10:1, 20:1, 50:1, 75:1 AND 100:1. ACUTE TOXICITY OF THE EXHAUST COMPONENTS IN THE SELECTED ANIMALS WAS DEFINED DURING A 4-HR EXPOSURE TEST, FOLLOWED BY A 14-DAY OBSERVATION PERIOD. HISTOPATHOLOGY STUDIES OF ALL MAJOR ORGANS WERE ALSO ACCOMPLISHED. EXHAUST GAS SAMPLES WERE ANALYZED FOR ORGANIC AND INORGANIC HALOGEN COMPOUNDS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A009 133 21/5 13/2
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

HYDROCARBON CONSTITUENTS OF T-56 COMBUSTOR EXHAUST. (U)

DESCRIPTIVE NOTE: PROGRESS REPT. DEC 73-DEC 74,. APR 75 17P CONKLE,JAMES P. ;LACKEY, WILLIAM W. ;MILLER,RICHARD L. ;
REPT. NO. SAM-TR-75-8

UNCLASSIFIED REPORT

DESCRIPTORS: *HYDROCARBONS, *EXHAUST GASES, *GAS TURBINES, *AIR POLLUTION, COMBUSTION, JET ENGINE FUELS, PRESSURE, GAS ANALYSIS, GAS CHROMATOGRAPHY, MASS SPECTROSCOPY, JET AIRCRAFT, TURBOJET ENGINES (U)
IDENTIFIERS: JT-8D ENGINES, T-56 ENGINES, GAS SAMPLING, AIR POLLUTION SAMPLING, JP-4, JP-5 FUEL, JP-6 FUEL, JET ENGINE EXHAUST (U)

CRYOGENIC SAMPLING WAS USED TO SAMPLE HYDROCARBON EXHAUST FROM A T-56 TURBINE ENGINE COMBUSTOR UNDER CONDITIONS SIMULATING IDLE POWER OF SEVERAL DIFFERENT AIRCRAFT. PARAMETERS STUDIED WERE FUEL TYPE--JP4, JP5, AND JP8--AND THE COMBUSTOR OPERATING PRESSURE--15, 33, 50, AND 75 PSIG. SAMPLES WERE ANALYZED WITH A GAS CHROMATOGRAPH-MASS SPECTROMETER-DATA SYSTEM WHICH SEPARATED 148 COMPOUNDS; THE HYDROCARBON CONTENT OF THE EXHAUST WAS INVERSELY PROPORTIONAL TO THE INLET PRESSURE AND DIRECTLY PROPORTIONAL TO THE BOILING POINT AND DENSITY OF THE FUEL TYPE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A009 281 21/7 13/6

ARMY MATERIEL COMMAND TEXARKANA TEX INTERN TRAINING CENTER

EVALUATION OF THE EFFECTS OF ENGINE DETERIORATION ON GASOLINE EXHAUST EMISSIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
APR 75 50P PAYNE,ALLEN L. ;
REPT. NO. USAMC-ITC-02-08-75-101

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, *RECIPROCATING ENGINES, *DETERIORATION, *WEAR, GASOLINE, AUTOMOTIVE ENGINEERING, FUEL ADDITIVES, SPARK IGNITION ENGINES, TEST EQUIPMENT, HYDROCARBONS, PREDICTIONS (U)
IDENTIFIERS: *AUTOMOBILE EXHAUST, TETRAETHYL LEAD, AIR FUEL RATIO, AUTOMOBILE ENGINES (U)

THIS PAPER DISCUSSES THE DESIGN OF AN EXPERIMENT TO DETERMINE THE RELATIONSHIP BETWEEN GASOLINE EXHAUST EMISSIONS AND ENGINE DETERIORATION. THE EXPERIMENTAL DESIGN IS SPECIFICALLY AIMED AT EXHAUST EMISSION TRENDS THROUGHOUT ENGINE LIFE. THE ENGINES USED FOR THIS EXPERIMENT ARE FOUR 4 1/2 H.P. WISCONSIN, MODEL MBKND, AIR COOLED, RECIPROCATING GASOLINE ENGINES. THE EXPERIMENTAL TECHNIQUES PRESENTED PROVIDE A GOOD FOUNDATION FOR FURTHER RESEARCH. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A009 882 13/2
ARGONNE NATIONAL LAB ILL

AIRPORT VICINITY AIR POLLUTION STUDY:
THE IMPACT OF MODIFIED AIRCRAFT TAXI
PROCEDURES ON AIRPORT AIR QUALITY. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 74 185P CIRILLO,RICHARD R. ;TSCHANZ,
JOHN F. ;CAMAIONI,JOSEPH E. ;
CONTRACT: DOT-FA71WAI-223
MONITOR: FAA-RD 74-212

UNCLASSIFIED REPORT

DESCRIPTORS: *TURBOJET ENGINES, *EXHAUST GASES,
*TAXIING, *AIRPORTS, FEASIBILITY STUDIES, AIR
POLLUTION, AIRCRAFT ENGINES, MODIFICATION,
MATHEMATICAL MODELS, SIMULATION, METHODOLOGY,
HYDROCARBONS, CARBON MONOXIDE, RATES (U)
IDENTIFIERS: AIR POLLUTION ABATEMENT, DOT/
5C (U)

THIS REPORT PRESENTS AN ANALYSIS OF AN AIRCRAFT
GROUND OPERATION CONTROL MEASURE DESIGNED TO REDUCE
AIR POLLUTANT EMISSIONS. IN A DEMONSTRATION
PROGRAM CONDUCTED AT THE ATLANTA AIRPORT,
TURBINE-POWERED AIR CARRIER AIRCRAFT TAXIED ON ONE
LESS ENGINE THAN NORMAL WITH THE REMAINING ENGINES AT
HIGHER THRUST SETTINGS. OBSERVATIONS MADE AT THE
AIRPORT DURING THE FIELD TEST ARE USED TO ESTIMATE
THE TOTAL REDUCTION IN ENGINE OPERATING TIME AND THE
EQUIVALENT REDUCTION IN EMISSIONS. THE ARGONNE
AIRPORT VICINITY AIR POLLUTION MODEL IS
USED TO CALCULATE THE IMPROVEMENT IN AIR QUALITY
RESULTING FROM THE TEST PROGRAM. THE MODEL IS A
GAUSSIAN-PLUME-TYPE DISPERSION MODEL THAT UTILIZES
POINT, AREA, AND LINE SOURCE FORMULATIONS TO SIMULATE
THE COMPLEX AIRPORT SYSTEM. COMPARISON IS MADE
WITH AIR QUALITY DATA COLLECTED BOTH BEFORE AND
DURING THE MODIFIED TAXI TEST FOR MODEL
VALIDATION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A009 897 13/6
PURDUE UNIV LAFAYETTE IND AUTOMATIC CONTROL CENTER

OPTIMIZATION OF AUTOMOTIVE ENGINE EFFICIENCY AND EMISSIONS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
APR 75 31P PRABHAKAR,R. ;GOODSON,R. E. ;CITRON,STEPHEN J. ;
REPT. NO. ACC-75-1, TR-7
CONTRACT: N00014-67-A-0226-0012
PROJ: NR-041-423

UNCLASSIFIED REPORT

DESCRIPTORS: *AUTOMOTIVE ENGINEERING, *EMISSION CONTROL, EXHAUST GASES, RECIRCULATION, FUEL AIR RATIO, SPARK IGNITION, PERFORMANCE TESTS, AIR POLLUTION, FUEL CONSUMPTION, CONTROL THEORY (U)
IDENTIFIERS: AUTOMOBILE EXHAUST, OPTIMIZATION (U)

EXPERIMENTAL CURVE FITTING TECHNIQUES ARE USED TO MODEL ENGINE EMISSIONS AS A FUNCTION OF ENGINE OPERATING VARIABLES. USING THIS MODEL, THE OPTIMAL CONTROL INPUTS FOR A GIVEN VEHICLE AND SPECIFIED TEST CYCLE ARE COMPUTED. AIR-FUEL RATIO, SPARK ADVANCE AND EXHAUST GAS RECIRCULATION WERE CONSIDERED AS THE CONTROL VARIABLES. THE RESULTS OF THIS STUDY SHOW THAT CONSIDERABLE IMPROVEMENT OVER STOCK CAR PERFORMANCE CAN BE OBTAINED IF THESE VARIABLES ARE OPTIMALLY CONTROLLED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A013 533 13/2
ARGONNE NATIONAL LAB ILL

A GENERALIZED AIR QUALITY ASSESSMENT MODEL FOR AIR FORCE OPERATIONS--AN OPERATOR'S GUIDE. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 MAY 73-1 JAN 74,
JUL 74 88P WANGEN,LAWRENCE E. ;ROTE, DONALD M. ;
PROJ: AF-1900, AFWL-74-105
MONITOR: AFWL TR-74-54

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES REPORT DATED JUN 74, AD-784 809.

DESCRIPTORS: *AIR POLLUTION, *MILITARY FACILITIES, *AIR QUALITY, AIRCRAFT, AIRPORTS, MANUALS, COMPUTER PROGRAMS, METEOROLOGICAL DATA, CARBON MONOXIDE, HYDROCARBONS, NITROGEN OXIDES, PARTICULATES, SULFUR OXIDES, AIR FORCE OPERATIONS, COMPUTERIZED SIMULATION (U)

THE ENERGY AND ENVIRONMENTAL DIVISION OF ARGONNE NATIONAL LABORATORY HAS DEVELOPED A SET OF COMPUTER PROGRAMS UNDER CONTRACT TO THE UNITED STATES AIR FORCE WEAPONS LABORATORY. THIS PACKAGE IS DESIGNED TO SERVE AS A GENERALIZED MODEL THAT CAN BE USED TO ASSESS THE IMPACT OF AIR FORCE OPERATIONS ON THE AIR ENVIRONMENT AT THE AIR BASE LEVEL. THIS REPORT IS A USER'S MANUAL FOR THESE COMPUTER PROGRAMS AND AS SUCH OUTLINES THE OVERALL FLOW OF THE PROGRAMS, THE LINKS BETWEEN PROGRAMS AND THE INPUT DATA REQUIRED TO IMPLEMENT EACH PROGRAM. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A013 933 21/2 7/4
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB OHIO

NO2 COMBUSTOR EMISSIONS INVESTIGATION. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. OCT 73-FEB 75, MAY 75 68P WALSH,DENNIS E. ;
REPT. NO. AFAPL-TR-75-46
PROJ: AF-3066
TASK: 306614

UNCLASSIFIED REPORT

DESCRIPTORS: *NITROGEN OXIDES, *COMBUSTION, *EXHAUST GASES, AIRCRAFT ENGINES, REACTION KINETICS, CHEMICAL REACTIONS, AIR POLLUTION, OXIDATION (U)
IDENTIFIERS: *NITROGEN DIOXIDE, AIRCRAFT EXHAUST, CHEMICAL REACTION MECHANISMS (U)

THIS REPORT PRESENTS THE RESULTS OF AN EXPERIMENTAL PROGRAM INVESTIGATING THE POSSIBILITY OF NO2 FORMATION WITHIN THE BURNERS OF AIRCRAFT GAS TURBINE ENGINES. AN ENVIRONMENT RESEMBLING THE COOLER REGIONS OF THE COMBUSTOR (E.G., THE COOLING LAYER) WAS ESTABLISHED TO TEST A PROPOSED MECHANISM INVOLVING: (1) TRANSPORT OF NO FROM A 'HOT' COMBUSTOR SECTION INTO A REGION MORE THERMODYNAMICALLY FAVORABLE FOR NO2 FORMATION, E.G., THE COOLING LAYER, AND (2) SUBSEQUENT REACTION OF THE NO TO FORM NO2 EITHER HOMOGENEOUSLY OR UNDER THE INFLUENCE OF CATALYSIS (HETEROGENEOUS OR HOMOGENEOUS). RESULTS OF EXPERIMENTS CONDUCTED EXAMINING THIS POSSIBILITY REVEALED THAT UNDER THE ACTION OF HYDROCARBONS, SIGNIFICANT AMOUNTS OF NO CAN BE OXIDATED TO NO2. THE ROLE OF DRIERITE ON NO2 ADSORPTION WAS ALSO INVESTIGATED. AN UNVERIFIED EXPLANATION OF THIS PHENOMENON IS PRESENTED INVOLVING REACTION OF NO2 AND H2O TO HNO3 AND NO. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A016 063 21/2 21/5
CALIFORNIA-UNIV-IRVINE-COMBUSTION LAB

MECHANISMS OF EXHAUST POLLUTANTS AND PLUME FORMATION IN CONTINUOUS COMBUSTION. (U)

DESCRIPTIVE NOTE: INTERIM REPT. 1 MAY 74-28 FEB 75, MAY 75 27P SAMUELSEN,G. S. ;PECK,R. E. ;
REPT. NO. UCI-ARTR-75-2
CONTRACT: AF-AFOSR-2710-74
PROJ: AF-6813, AF-9711
TASK: 681308, 971102
MONITOR: AFOSR TR-75-1288

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, *PLUMES, *COMBUSTION, GAS TURBINES, SCIENTIFIC RESEARCH, AIR POLLUTION (U)

THE INVESTIGATION OF EXHAUST POLLUTANT AND PLUME FORMATION IN CONTINUOUS COMBUSTION IS A COMBINED ANALYTICAL AND EXPERIMENTAL STUDY OF TURBULENT, BACKMIXED COMBUSTION IN GAS TURBINES. EXPERIMENTS ARE BEING CONDUCTED OPERATING WITH PREMIXED METHANE/AIR AND PROPANE/AIR REACTANTS. THEORETICALLY PREDICTED PROFILES OF THE FLOW PROPERTIES ARE BEING SYSTEMATICALLY COMPARED WITH EXPERIMENTALLY DETERMINED PROFILES. THE REPORT DISCUSSES THE FOLLOWING RESEARCH: THE EXPERIMENTAL FACILITY HAS BEEN MODIFIED AND UPDATED TO ACCOMODATE THE CURRENT STUDY; LIMITED EMISSION AND VELOCITY DATA HAVE BEEN OBTAINED; AND THE ANALYTICAL PHASE HAS BEEN DIRECTED TO UPDATING THE TURBULENCE MODEL USED IN THE ORIGINAL (PISTEP I) ORC NUMERICAL PROGRAM AND ADAPTING A P-V, 3-DIMENSIONAL PROGRAM DUBBED TEACH TO THE ORC SYSTEM. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A016 422 13/2
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

AN ENVIRONMENTAL EVALUATION OF ACID SCRUBBERS; BUILDING 628, MCCLELLAN AFB CA. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
AUG 75 37P JACKSON,JERRY W. ;
NORMINGTON,WILLIAM E. ;
REPT. NO. EHL-M-72M-11
PROJ: EHL-M-AAF-460

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *SCRUBBERS, ACIDS, PROCESSING, HYDROCHLORIC ACID, NITRIC ACID, PERCHLORIC ACID, CHEMICAL REACTIONS, CELLULOSE, EXHAUST GASES, EMISSION, VAPORS, ENVIRONMENTS, PERFORMANCE(ENGINEERING), EFFICIENCY, TEST METHODS (U)
IDENTIFIERS: LOCAL STUDIES, CHEMICAL LABORATORIES (U)

AN ENVIRONMENTAL EVALUATION WAS CONDUCTED OF AN OPERATION IN WHICH NITRIC, PERCHLORIC, AND HYDROCHLORIC ACID VAPORS AND AEROSOLS ARE GENERATED. THE EVALUATION WAS REQUESTED TO DETERMINE WHY A VISIBLE WHITE PLUME EXISTED AT THE EXHAUST OF A WET SCRUBBER. THE WHITE PLUME WAS FORMED REGARDLESS OF METEOROLOGICAL CONDITIONS WHEN ACID VAPORS AND AEROSOLS WERE GENERATED. THE EVALUATION INCLUDED A SCRUBBER EFFICIENCY STUDY, AN ENVIRONMENTAL ASSESSMENT AND AN AIR POLLUTION REGULATION COMPLIANCE TESTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A016 447 14/2 7/4 21/5

NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC CITY N J

SULFUR OXIDE MEASUREMENT IN AIRCRAFT TURBINE ENGINE EXHAUST, (U)

SEP 75 15P SLUSHER, GERALD R. ;

REPT. NO. FAA-NA-75-10
PROJ: FAA-201-521-010
MONITOR: FAA-RD 75-101

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, SULFUR OXIDES, AIRCRAFT ENGINES, GAS TURBINES, AIR POLLUTION, JET AIRCRAFT, CHEMICAL ANALYSIS, TURBOFAN ENGINES (U)
IDENTIFIERS: *AIRCRAFT EXHAUST, *SULFUR DIOXIDE, *SULFUR TRIOXIDE, GAS SAMPLING, DOT/5C (U)

A LIMITED INVESTIGATION WAS CONDUCTED TO MEASURE THE OXIDES OF SULFUR IN AIRCRAFT TURBINE ENGINE EXHAUST. THE OBJECTIVE WAS TO ESTABLISH THE RATIO OF SULFUR TRIOXIDE (SO3) TO SULFUR DIOXIDE (SO2) TO BE USED IN SUPPORT OF THE CLIMATIC IMPACT ASSESSMENT PROGRAM. THE SO3 CONCENTRATION WAS FOUND TO BE 13.8 PERCENT OF THE SO2 CONCENTRATION AS DETERMINED BY WET CHEMISTRY ANALYSIS. SULFUR RECOVERED IN THE SAMPLES WAS APPROXIMATELY 50 PERCENT OF THE TOTAL SULFUR IN THE FUEL. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A016 763 21/4
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB OHIO

ASSESSMENT OF JP-8 AS A REPLACEMENT FUEL FOR THE AIR FORCE STANDARD JET FUEL JP-4. PART I. ASSESSMENT OF JP-8/JP-4 FUEL IN NONCOMBAT ENVIRONMENT. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 72-APR 75,
JUN 75 92P BEERY,G. T. ;CLODFELTER,R. G. ;GANDEE,G. W. ;SPEAR,D. M. ;WIGHT,D. C. ;
REPT. NO. AFAPL-TR-74-71-PT-1
PROJ: AF-3048
TASK: 304807

UNCLASSIFIED REPORT

DESCRIPTORS: *JET ENGINE FUELS, PHYSICAL PROPERTIES, FLAMMABILITY, TEST METHODS, ACCEPTABILITY, ASSESSMENT, STANDARDS, COSTS, FIRE SAFETY, AIR POLLUTION, STORAGE (U)
IDENTIFIERS: AIRCRAFT EXHAUST, JP-4 FUEL, JP-8 FUEL, JP-5 FUEL (U)

THIS REPORT IS AN ASSESSMENT OF JP-8 AS A REPLACEMENT FUEL FOR THE AIR FORCE STANDARD JET FUEL JP-4. ALL FACETS OF THE PROBLEM ARE EXAMINED INCLUDING FIRE SAFETY UNDER COMBAT AND NONCOMBAT CONDITIONS, CRASH FIRE SAFETY, STORAGE, HANDLING AND MAINTENANCE SAFETY, LABORATORY TESTING, GUNFIRE TESTING, FLIGHT TESTING, COST AND AVAILABILITY, AND IMPACT ON CURRENT AIR FORCE WEAPONS SYSTEMS. THE REPORT CONCLUDES THAT A SIGNIFICANT IMPROVEMENT IN OVERALL FIRE SAFETY COULD BE ACHIEVED BY CONVERSION TO JP-8 HOWEVER, ADDITIONAL INVESTIGATION INTO PROBLEMS RELATED TO LOW TEMPERATURE GROUND START AND ALTITUDE RELIGHT SHOULD BE ACCOMPLISHED PRIOR TO CONVERSION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A016 992 21/9.2 7/4
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

COULOMETRIC MEASUREMENT OF HCL IN SPACE LAUNCH VEHICLE EXHAUST. (U)

DESCRIPTIVE NOTE: PROGRESS REPT. JUL 73-JUN 74,
SEP 75 18P LEGDAY,ROBERT C. ;MILLER,
RICHARD L. ;BEATTY,DAVID C. ;
REPT. NO. SAM-TR-75-27
PROJ: AF-7164
TASK: 716416

UNCLASSIFIED REPORT

DESCRIPTORS: *HYDROGEN CHLORIDE, EXHAUST GASES, COLORIMETRIC ANALYSIS, PLUME DETECTION, SOLID PROPELLANT ROCKET ENGINES, AIR POLLUTION, MONITORING, LAUNCH VEHICLES (U)
IDENTIFIERS: *MICROCOULOMETERS, *AIR POLLUTION DETECTION, *ROCKET EXHAUST, TITAN 3 (U)

LARGE SOLID-PROPELLANT ROCKET MOTORS RELEASE QUANTITIES OF HYDROGEN CHLORIDE (HCL) GAS AS A PRODUCT OF COMBUSTION. SINCE HCL IS A POTENTIAL ENVIRONMENTAL HAZARD, THE MEASUREMENT OF ITS CONCENTRATION IN THE STABILIZED ROCKET EXHAUST GROUND CLOUD BECOMES IMPORTANT TO VALIDATE DIFFUSION ESTIMATES GOVERNING LAUNCH CONSTRAINTS, AS WELL AS TO ASSESS THE BIOLOGIC AND ECOLOGIC IMPACT OF HCL REACTIONS WHICH MAY OCCUR IN THE EXHAUST PLUME. THIS PAPER DESCRIBES THE DEVELOPMENT AND TEST OF A MICROCOULOMETER FOR DETECTION OF HCL IN ROCKET EXHAUST, AND PRESENTS ANALYTICAL RESULTS FROM TITAN III LAUNCH VEHICLE MONITORING STUDIES AT CAPE CANAVERAL, FLORIDA, AND VANDENBERG AIR FORCE BASE, CALIFORNIA. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A017 296 7/4

ARMY MISSILE RESEARCH DEVELOPMENT AND ENGINEERING LAB
REDSTONE ARSENAL ALA ADVANCED SENSORS DIRECTORATE

MEASUREMENTS OF INFRARED RADIATION CHARACTERISTICS OF A SMALL KEROSENE/GASEOUS OXYGEN HOT GAS GENERATOR. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUL 75 102P JACKSON,H. TRACY , JR;
REPT. NO. RE-76-1

UNCLASSIFIED REPORT

DESCRIPTORS: *INFRARED DETECTION, *GAS GENERATOR ENGINES, *RADIANCE, *EXHAUST PLUMES, SHOCK WAVES, MEASUREMENT, KEROSENE, OXYGEN, ATOMS, LABORATORY EQUIPMENT, AXIALLY SYMMETRIC FLOW, EXHAUST GASES (U)
IDENTIFIERS: JET ENGINE EXHAUST (U)

EXPERIMENTAL MEASUREMENTS OF THE SPATIAL AND SPECTRAL DISTRIBUTION OF INFRARED RADIATION EMITTED FROM THE EXHAUST PLUME OF A SMALL KEROSENE/GASEOUS OXYGEN HOT GAS GENERATOR OPERATING AT AMBIENT CONDITIONS WERE OBTAINED FOR OXIDIZER/FUEL RATIOS BETWEEN 1.15 AND 3.0. THE AXIAL DISTRIBUTION OF INFRARED RADIANT INTENSITY WAS OBSERVED TO HAVE A SERIES OF MAXIMA AND MINIMA ('HOT SPOTS') WHICH CORRESPONDED TO THE LOCATION OF SHOCK WAVES OR MACH DISCS IN THE CENTRAL PORTION OF THE EXHAUST PLUME. FOR OXIDIZER/FUEL RATIOS LESS THAN 3, THE RADIATION PEAK OCCURRED MANY NOZZLE RADII DOWNSTREAM AND THE MAGNITUDE OF THE RADIANT INTENSITY WAS LARGER THAN THE PEAK VALUE BEHIND THE FIRST REFLECTED SHOCK WAVE. FOR OXIDIZER/FUEL RATIOS GREATER THAN 3, THE PEAK RADIATION OCCURRED IN THE FIRST SHOCK-HEATED ZONE. IT WAS OBSERVED THAT EVEN THOUGH THE SHOCK HEATED REGIONS PRODUCED LOCALLY VERY HIGH VALUES OF THE RADIANT INTENSITY, THE MAJORITY OF THE TOTAL RADIATION IS EMITTED FROM THE AFTERBURNING PLUME DOWNSTREAM OF THE SHOCK ZONES. THE SPECTRAL DISTRIBUTION MEASUREMENTS INDICATED THAT THE PRINCIPAL RADIATION WAS IN THE 4.4 MICROMETER BAND FROM HOT WATER VAPOR AND CARBON DIOXIDE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A017 652 13/2
NAVAL SURFACE WEAPONS CENTER WHITE OAK LAB SILVER SPRING MD

REMOVAL OF TETRANITROMETHANE FROM AIR STREAMS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
OCT 75 21P GILLIGAN,WILLIAM H. ;HALL, THOMAS N. ;
REPT. NO. NSWC/WOL/TR-75-128
PROJ: NSWC-1272/L01-23

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *METHANE, EXPLOSIVES, TNT, NITROGEN OXIDES, REMOVAL, EXHAUST GASES, SCRUBBERS (U)
IDENTIFIERS: *TETRANITROMETHANE, POLYNITROALIPHATICS (U)

DURING THE MANUFACTURE OF TNT, ONE OF THE SIDE PRODUCTS FORMED IN RELATIVELY SMALL AMOUNT IS TETRANITROMETHANE (TNM). IN THE PAST IT HAS BEEN THE PRACTICE TO VENT THE TNM ALONG WITH SOME NITROGEN OXIDES (MAINLY NO) TO THE ATMOSPHERE. HOWEVER, BECAUSE OF PRESENT-DAY AWARENESS OF POLLUTION PROBLEMS, EPA REGULATIONS NOW REQUIRE THE COMBINED NO/TNM PRESENT IN THE EXHAUST GASES TO BE BELOW 100 PPM. IN ORDER TO MEET THIS REQUIREMENT MOST OF THE TNM MUSTBE REMOVED. SINCE TNM AS A PRECURSOR OF NITROFORM, CAN BE USED FOR THE SYNTHESIS OF A WIDE VARIETY OF POLYNITROALIPHATICS A DESIRABLE SOLUTION WOULD BE TO COLLECT THE TNM AS SUCH OR AS NITROFORM THEREBY REDUCING THE COST OF POLLUTION ABATEMENT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A018 193 21/5
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

AN INVESTIGATION OF THE FLOW IN TURBOJET TEST CELL AUGMENTERS. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
SEP 75 81P HAYES,JACK DOUGLAS ;
REPT. NO. NPS-57NT75101

UNCLASSIFIED REPORT

DESCRIPTORS: *JET ENGINES, *TEST FACILITIES, *EXHAUST GASES, *AIR PULLUTION, AIR ENTRAINMENT, AUGMENTATION, FLOW FIELDS, COMPUTER PROGRAMMING, THESES (U)

A TWO-DIMENSIONAL ELLIPTIC COMPUTER MODEL WAS ADAPTED TO THE SOLUTION OF THE FLOW FIELD IN A TURBOJET THEST CELL SECTION WHICH CONTAINED THE ENGINE EXHAUST DUCT AND AUGMENTER TUBE. VARIOUS ENGINE POWER SETTINGS, AUGMENTATION RATIOS, AND AUGMENTER GEOMETRIES WERE INVESTIGATED. FLOW VISUALIZATION AND STATIC PRESSURE RECOVERY WERE PRIMARY OBJECTIVES SUBJECT TO SPECIFIED ENGINE POWER SETTINGS AND AUGMENTATION RATIOS. CAPABILITIES AND LIMITATIONS OF THE MODEL ARE DISCUSSED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A019 094 21/2 7/4

GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE GROUP

DEVELOPMENT OF EMISSIONS MEASUREMENT TECHNIQUES FOR AFTERBURNING TURBINE ENGINES. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 APR 73-31 MAR 75,

OCT 75 348P LYON,T. F. ;COLLEY,W. C. ;KENWORTHY,M. J. ;BAHR,D. W. ;

REPT. NO. R75-AEG457

CONTRACT: F33615-73-C-2047

PROJ: AF-1900

MONITOR: AFAPL TR-75-52

UNCLASSIFIED REPORT

DESCRIPTORS: *JET ENGINES, *AIRCRAFT ENGINES, *EXHAUST GASES, *AFTERBURNERS, *AIR POLLUTION, SAMPLING, MEASUREMENT, MATHEMATICAL MODELS, CONCENTRATION(COMPOSITION), CARBON MONOXIDE, HYDROCARBONS, FLOW RATE, NITROGEN OXIDES, PROBES, REACTION KINETICS, PLUMES, COMBUSTION (U)

IDENTIFIERS: J85-5 ENGINES, J79-15 ENGINES, *GAS SAMPLING (U)

DETAILED EMISSIONS MEASUREMENTS WERE MADE THROUGHOUT THE PLUMES OF J85-5 AND J79-15 ENGINES AT MILITARY POWER AND THREE AFTERBURNING POWER LEVELS. CALCULATIONS OF INTEGRATED POLLUTANT FLOW RATES AT VARIOUS AXIAL STATIONS SHOWED THAT HYDROCARBONS ARE MOST REACTIVE IN THE PLUME, WITH SIGNIFICANT DECREASES OBSERVED AT ALL AFTERBURNING POWER LEVELS. CARBON MONOXIDE CAN EITHER INCREASE OR DECREASE WITH AXIAL DISTANCE IN THE PLUME, DEPENDING ON THE POWER LEVEL AND THE HYDROCARBON CONTENTS. NO SIGNIFICANT CHANGE IN TOTAL OXIDES OF NITROGEN WAS OBSERVED AT ANY POWER LEVEL. A COMPUTERIZED ANALYTICAL PLUME MODEL WAS DEVELOPED AND VERIFIED, WHICH CONSIDERS THE SIMULTANEOUS MIXING AND CHEMICAL REACTION PROCESSES THAT CAN OCCUR IN THE PLUMES OF AFTERBURNING ENGINES. THE MODEL ENABLES CALCULATING LOCAL CONCENTRATIONS OF THE VARIOUS EXHAUST GASES AT ANY AXIAL OR RADIAL LOCATION FROM INITIAL VALUES MEASURED AT THE EXHAUST PLANE. A PROCEDURE FOR AFTERBURNING ENGINE EMISSIONS MEASUREMENTS WAS DEVELOPED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A019 456 6/20 5/2
CALIFORNIA UNIV IRVINE

TOXIC HAZARDS RESEARCH UNIT ANNUAL TECHNICAL REPORT: 1975. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 74-MAY 75, OCT 75 221P MACEWEN,J. D. ;VERNOT,E. H. ;
CONTRACT: F33615-73-C-4059
PROJ: AF-6302
TASK: 630201
MONITOR: AMRL TR-75-57

UNCLASSIFIED REPORT

DESCRIPTORS: *TOXIC HAZARDS, *REPORTS, OCCUPATIONAL DISEASES, TOXICITY, LIQUID PROPELLANTS, HYDRAZINE, DIMETHYL HYDRAZINE (1-1), CHLOROMETHANES, ETHANES, FLUORINE COMPOUNDS, INHALATION, COAL TAR, AEROSOLS, TOXICOLOGY, WATER POLLUTION, EXPOSURE(PHYSIOLOGY), LABORATORY EQUIPMENT, INDUSTRIAL HYGIENE, INGESTION(PHYSIOLOGY), SKIN(ANATOMY), AIR POLLUTION, BLOOD ANALYSIS, CHEMICAL ANALYSIS, INTERACTIONS, LABORATORY TESTS, NEOPLASMS, LETHAL DOSAGE, CORROSION, CHEMICALS, MAMMALS (U)
IDENTIFIERS: HYDRAZINE(MONOMETHYL), MONOMETHYL HYDRAZINE, PENTANE/PER FLUORO, PERFLUOROPENTANE, DICHLOROMETHANE, TRICHLOROETHANES, METHANE/BIS(2-2-DINITRO-2-FLUORETHOXY), SYFO (U)

THE RESEARCH PROGRAMS OF THE TOXIC HAZARDS RESEARCH UNIT (THRU) FOR THE PERIOD OF JUNE 1974 THROUGH MAY 1975 ARE REVIEWED IN THIS REPORT. ACUTE TOXICITY EXPERIMENTS WERE CONDUCTED ON SYFO, FEFO, HYDRAZINE, MMH AND UDMH. CHRONIC TOXICITY EXPERIMENTS WERE CONDUCTED WITH MMH IN DRINKING WATER, COAL TAR AEROSOLS, INHALED UDMH AND WITH A MIXTURE OF DICHLOROMETHANE AND 1,1,1-TRICHLOROETHANE. ORAL AND PERCUTANEOUS TOXICITY DETERMINATIONS AND SKIN IRRITATION AND SKIN SENSITIZATION STUDIES WERE MADE ON A NUMBER OF TRANSPORTABLE CHEMICAL AGENTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A019 583 4/1 7/4 14/2

MISSOURI UNIV ROLLA GRADUATE CENTER FOR CLOUD PHYSICS RESEARCH

AIRCRAFT MEASUREMENTS OF AITKEN NUCLEI IN THE LOWER STRATOSPHERE. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
APR 75 54P PODZIMEK,JOSEF ;SEDLACEK,W. A. ;HABERL,J. B. ;
REPT. NO. AG-2
CONTRACT: N00014-75-C-0413, DOT-AS-20023
MONITOR: DOT/TST 75-129

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH LOS ALAMOS SCIENTIFIC LAB., N. MEX. AND GENERAL ELECTRIC CO., PITTSFIELD, MASS.

DESCRIPTORS: *STRATOSPHERE, *AEROSOLS, *AIR POLLUTION, EXHAUST GASES, NEW MEXICO, TEXAS, MEASUREMENT, AIRBORNE, PARTICLES, CONCENTRATION(COMPOSITION), NUCLEI, SAMPLING, MONITORING, CALIBRATION, PARTICLE SIZE, LIGHT SCATTERING, ELECTROSTATIC PRECIPITATION, CHARGED PARTICLES, MOUNTAINS (U)

IDENTIFIERS: *AIRBORNE WASTES, *AIR POLLUTION SAMPLING, AITKEN NUCLEI (U)

THE PURPOSE OF THIS ARTICLE IS TO EVALUATE THE FIRST AN MEASUREMENTS USING THE NEW GE AN COUNTER IN STRATOSPHERIC CONDITIONS. THE INSTRUMENT BRIEFLY DESCRIBED IN THIS ARTICLE WAS FLOWN ON A WB-57F AIRCRAFT IN 1974 UP TO AN ALTITUDE OF 20 KM. THE VERTICAL PROFILES OF AN CONCENTRATIONS, MEASURED MAINLY OVER NEW MEXICO AND TEXAS, SHOWED AN COUNTS COMPARABLE WITH THE PREVIOUS BALLOON MEASUREMENTS IN THE TROPOPAUSE (SEVERAL HUNDRED TO 1,000 N/CC). HOWEVER, IN ALTITUDES ABOVE 13 KM, THE MEASURED AN CONCENTRATIONS WERE HIGHER BY ONE ORDER OF MAGNITUDE (30 N/CC) THAN THE OLDER DATA OF JUNGE ET. AL. (1961). THE FLIGHTS OVER THE ROCKY MOUNTAINS AND OVER TEXAS INDICATE A POTENTIALLY STRONG INFLUENCE THAT MOUNTAINOUS AREAS HAVE ON AN COUNTS IN THE LOWER STRATOSPHERE. THE MEASUREMENTS ALSO SHOWED THE POLLUTION OF THE LOWER STRATOSPHERE CAUSED BY AIRCRAFT EMISSIONS IN THE TROPOPAUSE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A019 783 13/2 21/7
TRANSPORTATION SYSTEMS CENTER CAMBRIDGE MASS

U.S. COAST GUARD POLLUTION ABATEMENT PROGRAM - TWO-STROKE CYCLE OUTBOARD ENGINE EMISSIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JAN 74-JUN 75, SEP 75 134P WALTER,R. A. ;
REPT. NO. TSC-USCG-75-4
MONITOR: USCG D-122-75

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *EMISSION CONTROL, *MARINE ENGINES, OUTBOARD, TUNING, FUEL CONSUMPTION, POLLUTION ABATEMENT, COAST GUARD, EXHAUST GASES, BOATS, TEST METHODS, COMPUTER PROGRAMS, INTERNAL COMBUSTION ENGINES (U)
IDENTIFIERS: OUTBOARD ENGINES, DOT/5C (U)

THIS REPORT DOCUMENTS THE RESULTS OF EMISSIONS TESTS PERFORMED ON THREE OLD AND TWO NEW OUTBOARD ENGINES. TESTS OF THE EMISSIONS WERE MADE BEFORE AND AFTER WATER CONTACT. OLDER ENGINES WERE TESTED IN AS-RECEIVED CONDITION, TUNED TO FACTORY SPECIFICATIONS AND RETESTED. AFTER BEING TUNED, THESE ENGINES SHOWED IMPROVEMENTS IN EMISSIONS AND FUEL CONSUMPTION. THE NEW ENGINES WITH IMPROVED IGNITION AND COMBUSTION CHAMBER DESIGN AND CRANKCASE DRAINAGE RECYCLING SHOWED LESS EMISSION AND BETTER FUEL CONSUMPTION CHARACTERISTICS THAN THE OLDER ENGINES. THE RESULTS OF THESE TESTS WERE USED TO CALCULATE THE EMISSIONS IMPACT OF THE UNITED STATES COAST GUARD OUTBOARD FLEET FOR COMPARISON WITH THE EMISSIONS IMPACT OF OTHER COAST GUARD VESSELS AND VESSELS IN GENERAL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A020 032 14/2 7/1
SCIENCE APPLICATIONS INC LA JOLLA CALIF

A PORTABLE GAS-FILTER-CORRELATION SPECTROMETER FOR HCL AND HF. (U)

DESCRIPTIVE NOTE: FINAL REPT. 15 JAN 74-31 JAN 75, OCT 75 41P BARTLE,E. ROY ;
REPT. NO. SAI-75-525-LJ
CONTRACT: F41609-74-C-0014
PROJ: AF-7164
TASK: 716416
MONITOR: SAM TR-75-33

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *POLLUTANTS, *HYDROGEN FLUORIDE, *HYDROGEN CHLORIDE, MONITORS, GAS DETECTORS, ABSORPTION SPECTRA, EMISSION SPECTRA, MOBILITY, SENSITIVITY, LABORATORY TESTS, COMBUSTION PRODUCTS, EXHAUST GASES, PORTABLE EQUIPMENT (U)
IDENTIFIERS: *GAS FILTER CORRELATION SPECTROMETRY, *AIR POLLUTION DETECTION, REMOTE SENSING, DESIGN CRITERIA (U)

A PORTABLE GAS-FILTER-CORRELATION SPECTROMETER (GFCS) HAS BEEN DEVELOPED TO CONTINUOUSLY MONITOR HCL AND HF OVER THE CONCENTRATION RANGE FROM 0.2 TO 1000 PPM. THE UNIT OPERATES USING EITHER 115 VAC 60 HZ OR 12 VDC. THE ATTAINED THRESHOLD SENSITIVITIES OF 167 AND 200 PPB FOR HCL AND HF, RESPECTIVELY, ARE NEARLY THOSE PREDICTED FROM THEORETICAL CONSIDERATIONS. EXCELLENT SPECIFICITY IS OBTAINED IN THE PRESENCE OF ANTICIPATED INTERFERING SPECIES. THE SYSTEM ALSO CAN BE CONVERTED INTO AN ACTIVE LONG-PATH SYSTEM USING A RETROREFLECTOR; RANGES UP TO 500 M (1-KM OPTICAL PATH) CAN BE USED WITH ABOUT THE SAME SENSITIVITES. A TECHNIQUE FOR PASSIVE SINGLE-ENDED REMOTE SENSING IS DESCRIBED THAT APPEARS TO OFFER SIGNIFICANT POTENTIAL FOR RANGES UP TO 1 KM. THIS MONITOR CAN BE USED ON AIR POLLUTION DETECTION. (U)

AD-A041 800 DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA F/G 13/2
ENVIRONMENTAL POLLUTION: AIR POLLUTION - EXHAUST GASES.(U)
JUL 77
UNCLASSIFIED DDC/BIB-77/08 NL

3 OF 4
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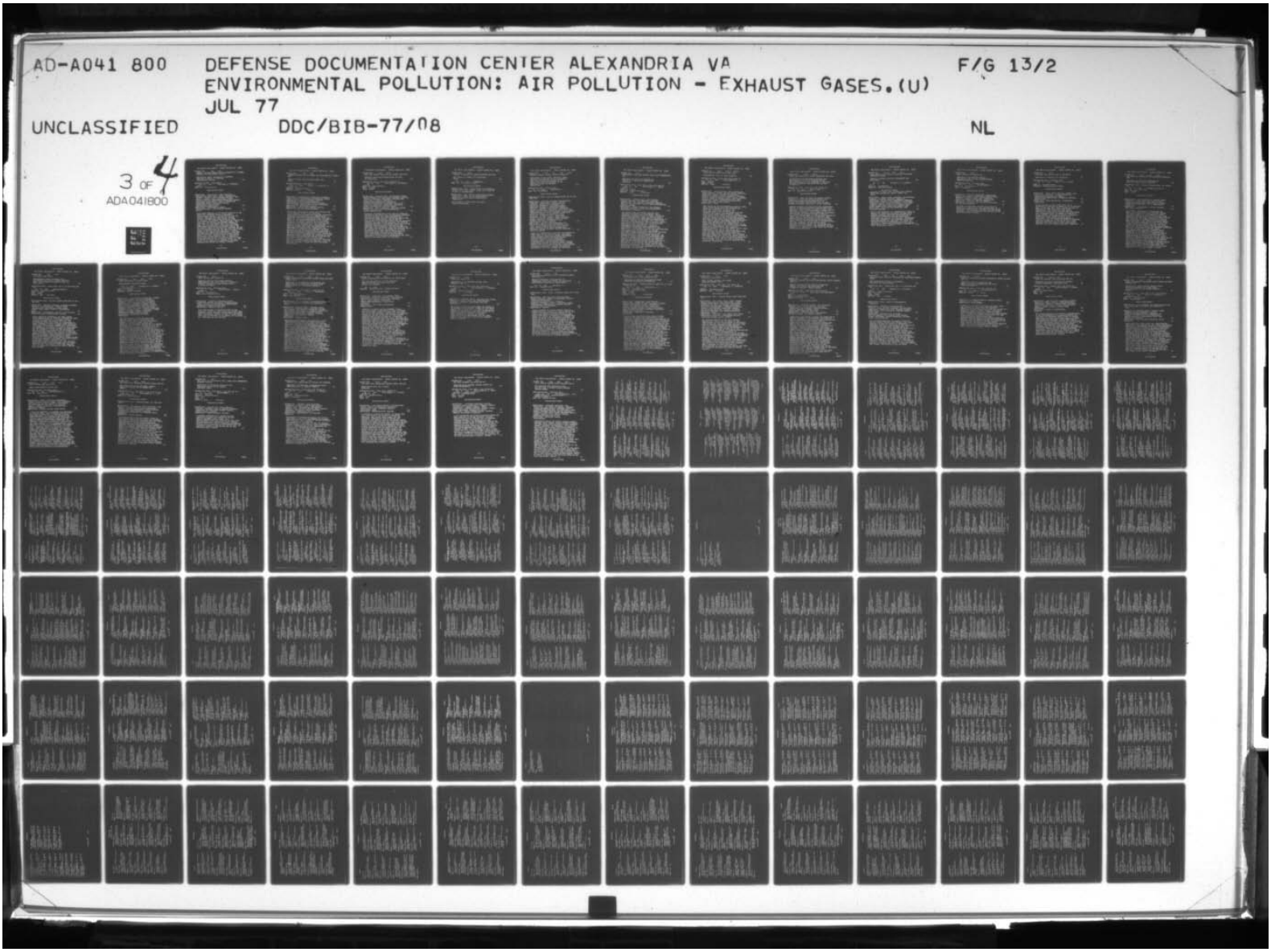

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A020 169 13/2 1/5
FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS RESEARCH AND DEVELOPMENT SERVICE

AIR QUALITY IMPACT ANALYSIS OF A PROPOSED NORTH/SOUTH RUNWAY AT ANCHORAGE INTERNATIONAL AIRPORT. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 75 95P TIGUE,JOHN E. ;CARPENTER, LARRY K. ;
REPT. NO. FAA-RD-75-179

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR QUALITY, *AIR POLLUTION, MATHEMATICAL PREDICTION, ALASKA, INTERNATIONAL AIRPORTS, RUNWAYS, GROUND SUPPORT EQUIPMENT, AIR TRAFFIC, EXHAUST GASES, DISPERSING, PLUMES, EMISSION SPECTRA, COMPUTERIZED SIMULATION, ADVERSE CONDITIONS, ENVIRONMENTS, IMPACT, COMMUNITIES, ATMOSPHERE MODELS, POLLUTANTS, SPATIAL DISTRIBUTION, FLOW CHARTING, CONCENTRATION(COMPOSITION) (U)
IDENTIFIERS: ENVIRONMENTAL IMPACT, ANCHORAGE(ALASKA), AVAP COMPUTER PROGRAM, DOT/5C (U)

THIS REPORT PRESENTS AN AIR QUALITY ANALYSIS OF THE IMPACT OF A PROPOSED RUNWAY AT ANCHORAGE INTERNATIONAL AIRPORT. A PROJECTION OF 1978 AIR TRAFFIC CONDITIONS WAS MADE AND THE AIRPORT VICINITY AIR POLLUTION (AVAP) MODEL WAS USED TO CALCULATE THE AIRCRAFT IMPACT UPON AIR QUALITY FOR CASES WITH AND WITHOUT THE PROPOSED RUNWAY. THE AVAP MODEL IS A GAUSSIAN-PLUME-TYPE DISPERSION MODEL THAT UTILIZES POINT, AREA, AND LINE SOURCE FORMULATIONS TO SIMULATE THE AIRPORT SYSTEM. THE AIR QUALITY IMPACT IS EVALUATED BY COMPARING THE AIR QUALITY CONCENTRATIONS FOR THE CASE WITH THE PROPOSED RUNWAY TO THE CASE WITHOUT THE RUNWAY. TYPICAL ANCHORAGE DAYS WHERE THE METEOROLOGY IS POOR WERE SELECTED SUCH THAT RATHER POOR AIR QUALITY WOULD RESULT. THE STUDY INDICATES THAT THE ADDITION OF THE PROPOSED RUNWAY DOES NOT MAKE A SIGNIFICANT IMPACT UPON THE AIRPORT VICINITY AIR QUALITY. AREAS OF CONCERN DO EXIST ON THE AIRPORT ITSELF, BUT THE IMPACT ON THE COMMUNITIES SURROUNDING ANCHORAGE INTERNATIONAL AIRPORT IS MINIMAL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A020 352 13/2 9/2
ARGONNE NATIONAL LAB ILL ENERGY AND ENVIRONMENTAL SYSTEMS DIV

AIRPORT VICINITY AIR POLLUTION MODEL USER GUIDE. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 75 275P WANG,I. T. ;CONLEY,L. A.
;ROTE,D. M. ;
CONTRACT: DOT-FA71WAI-223
MONITOR: FAA-RD 75-230

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTERIZED SIMULATION, *AIRPORTS, *AIR POLLUTION, PARTICULATES, MATHEMATICAL MODELS, COMPUTATIONS, COMPUTER PROGRAMS, COMPUTER PROGRAMMING, CONCENTRATION(CHEMISTRY), METEOROLOGICAL DATA, EXHAUST GASES, AIRCRAFT, FLOW CHARTING, AIRCRAFT ENGINES, WIND DIRECTION, WIND VELOCITY, AUTOMOTIVE VEHICLES (U)
IDENTIFIERS: DOT/5C, ENVIRONMENTAL SURVEYS, AIRPORT VICINITY AIR POLLUTION MODEL (U)

THIS REPORT DESCRIBES IN DETAIL THE COMPUTER CODE OF THE AIRPORT VICINITY AIR POLLUTION (AVAP) MODEL AND THE VARIABLES REQUIRED TO EXERCISE THE MODEL. THE AVAP MODEL IS A COMPUTERIZING COMPREHENSIVE AIRPORT SIMULATION MODEL WHICH CAN SERVE AS A TOOL IN EVALUATING THE TOTAL AIR QUALITY IMPACT OF ALL AIRPORT OPERATIONS ON THE AIRPORT VICINITY. THE REPORT FOCUSSES ON THE OPERATIONAL PROCEDURES AND DESCRIPTIONS OF THE STRUCTURE AND FUNCTION OF THE COMPUTER CODE. THE STRUCTURE, CHAIN OF COMMAND THAT LINKS THE SUBROUTINES, AND THE MORE IMPORTANT COMPUTATIONAL SUBROUTINES ARE ILLUSTRATED IN DETAILED FLOW DIAGRAMS. THE BASIC FORMULAS USED IN THE CALCULATIONS ARE PRESENTED. ONE SECTION PROVIDES GUIDELINES FOR PREPARATION OF THE INPUT DATA AND CAN SERVE AS A 'MINI' INSTRUCTION MANUAL BY ITSELF. PROCEDURES ARE DESCRIBED BY WHICH THE AIRPORT AND ENVIRON DATA CAN BE COLLECTED AND CAST INTO THE PROPER FORMS. THE DATA DECK FORMATING, VARIABLE LIMITS AND OMISSIONS PERMITTED, AND THE COMPUTER CONFIGURATION REQUIRED TO RUN THE CODE ARE DISCUSSED. SAMPLES OF INPUT AND OUTPUT ARE INCLUDED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A020 587 22/2 21/8
AIR FORCE ROCKET PROPULSION LAB EDWARDS AFB CALIF

THRUSTER CONTAMINATION PREDICTIONS FOR NATO III SATELLITE. (U)

DESCRIPTIVE NOTE: FINAL REPT. SEP-DEC 75,
DEC 75 65P DAVIS,LARRY P. ;WITBRACHT, I. LEE ;
REPT. NO. AFRPL-TR-75-67
PROJ: AF-5730
TASK: 573009

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, *CONTROLLABLE THRUST ROCKET ENGINES, ATTITUDE CONTROL SYSTEMS, SATELLITE ATTITUDE, HYDRAZINE, THRUSTERS, CONTAMINATION, SOLAR PANELS, SURFACE PROPERTIES, PERFORMANCE(ENGINEERING), TEMPERATURE, COMPUTER APPLICATIONS, SUPERSONIC FLOW, WATER, ARTIFICIAL SATELLITES, SPACECRAFT COMPONENTS, PLUMES, MATHEMATICAL ANALYSIS, GRAPHS (U)
IDENTIFIERS: NATO 3 SATELLITE, SATELLITE CONTROL SYSTEMS, AIR POLLUTION EFFECTS(MATERIALS), CONTAM COMPUTER CODE (U)

POTENTIAL CONTAMINATION OF THE NATO III SATELLITE SURFACES BY THE EFFLUX FROM ITS HYDRAZINE THRUSTERS HAS BEEN STUDIED. THE CONTAM COMPUTER CODE, COUPLED WITH EMPIRICAL DATA FOR ESTIMATION OF MASS FLUX IN THE PLUME BACKFLOW REGIONS AND FOR CALCULATION OF VAPORIZATION RATES FROM THE SPACECRAFT SURFACES, WAS USED FOR THE ANALYSIS. TWO TYPES OF THRUSTER OPERATIONS, SHORT PULSE TRAINS FOR ATTITUDE MANEUVERS AND LONG PULSE TRAINS FOR ALTITUDE MANEUVERS, WERE CONSIDERED. THE RESULTS SHOW THAT ONLY SMALL NET DEPOSITS OF WATER AND HYDRAZINE ARE TO BE EXPECTED ON A SMALL PERCENTAGE OF THE TOTAL SPACECRAFT SOLAR PANEL AREA AT TEMPERATURES OF - 72F. IN ADDITION, THESE DEPOSITS WILL HAVE A VERY SHORT RESIDENCE TIME ON THESE SURFACES. LIMITATIONS IN THE ANALYSIS ARE PRESENTED AND THEIR IMPACT ON THE CONCLUSIONS ARE DISCUSSED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A021 082 13/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

LET MOSCOW BE A MODEL CITY: THE FIFTH OCEAN, (U)

FEB 76 11P LEBEDYUK,G. ;
REPT. NO. FTD-ID(RS)I-0110-76

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF MOSKOVSKAYA PRAVDA (USSR) N153 (16880) P2 COL 1-6, 2 JUL 75, BY GALE M. WEISENBARGER.

DESCRIPTORS: *AIR QUALITY, *POLLUTION ABATEMENT, URBAN AREAS, USSR, AIR POLLUTION CONTROL EQUIPMENT, EXHAUST GASES, PURIFICATION, TRANSLATIONS (U)

LET MOSCOW BE A MODEL CITY: THE FIFTH OCEAN--TRANSLATION.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A021 948 14/2 7/1 7/4 21/4
EDGEWOOD ARSENAL ABERDEEN PROVING GROUND MD

PROCEEDINGS OF THE ANNUAL SYMPOSIUM 'TRACE ANALYSIS AND DETECTION IN THE ENVIRONMENT' (6TH) HELD AT EDGEWOOD ARSENAL ON 29 APRIL-1 MAY 1975 AND SPONSORED BY THE AMERICAN DEFENSE PREPAREDNESS ASSOCIATION. (U)

DESCRIPTIVE NOTE: SPECIAL PUB.,
JAN 76 318P BROWN,JOHN A. ;
REPT. NO. EO-SP-76001

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED JAN 75, AD-A007 799.

DESCRIPTORS: *CHEMICAL ANALYSIS, *GAS ANALYSIS, *MEETINGS, *TRACE GASES, *TRACE ELEMENTS, *SAMPLING, CONCENTRATION(CHEMISTRY), AIR POLLUTION, CRYOGENICS, CALIFORNIA, SMOG, LABORATORY EQUIPMENT, COMBUSTION PRODUCTS, PARTICLES, INFRARED SPECTROSCOPY, ABSORPTION SPECTRA, ATMOSPHERIC CHEMISTRY, FIELD TESTS, GAS CHROMATOGRAPHY, RAMAN SPECTROSCOPY, VINYL PLASTICS, CHEMILUMINESCENCE, WATER POLLUTION, MICROSCOPY, NARCOTICS, MARIJUANA, MONITORING, OPIUM ALKALOIDS, PLASMAS(PHYSICS), EXPLOSIVES, EFFLUENTS, FLY ASH, CHEMICAL AGENT DETECTORS, PLUMES, INDUSTRIAL HYGIENE, LIQUID CRYSTALS, EMISSION SPECTRA, POLAROGRAPHY, DYES, PHOTOELECTRIC EFFECT, MERCURY (U)
IDENTIFIERS: AIR POLLUTION DETECTION, AIR POLLUTION SAMPLING, LASER SPECTROSCOPY, JP-4 FUELS, GLASS SAMPLING METHOD, GLASS FILTERS, VINYL CHLORIDE, WATER POLLUTION SAMPLING, CONTINUOUS AQUEOUS MONITORS, EXHAUST EMISSIONS, ISOTOPIC LABELING (U)

PAPERS ON CONCENTRATION, DETECTION AND SAMPLING OF TRACE GASES IN THE AIR WERE GIVEN. TECHNIQUES USING CRYOGENIC SAMPLING, INFRARED SPECTROSCOPY, ISOTOPE-ZEEMAN ATOMIC ABSORPTION MERCURY DETECTOR, MULTIPASS RAMAN INSTRUMENT, ULTRAMICROSCOPY, PLASMA CHROMATOGRAPHY, ULTRASENSITIVE FLAME PHOTOMETER, DATA-A PATTERN RECOGNITION, ISOTOPE DILUTION ENZYMATIC SYSTEMS, CHEMICAL AGENT DECISION TECHNOLOGY, LIQUID CRYSTAL TECHNOLOGY, MICROWAVE, EMISSION SPECTROSCOPY, POLAROGRAPHY AND OTHER METHODS ARE DESCRIBED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A022 353 7/4
AERONUTRONIC FORD CORP NEWPORT BEACH CALIF AERONUTRONIC DIV

MONITORING NO AND CO IN AIRCRAFT JET EXHAUST BY A GAS-FILTER CORRELATION TECHNIQUE. (U)

DESCRIPTIVE NOTE: FINAL REPT. 3 MAR 75-14 JAN 76,
JAN 76 70P GRYVNAK,DAVID A. ;BURCH,
DARRELL E. ;
REPT. NO. U-6179
CONTRACT: F33615-75-C-2038
MONITOR: AFAPL TR-75-101

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, *GAS TURBINES, *CARBON MONOXIDE, *GAS ANALYSIS, *INFRARED SPECTROSCOPY, JET ENGINES, MONITORING, INFRARED SPECTRA, GAS DETECTORS, INFRARED SPECTROPHOTOMETERS, AIRCRAFT ENGINES (U)
IDENTIFIERS: *AIRCRAFT EXHAUST, T-56 ENGINES, *NITROGEN OXIDE(NO), CORRELATION SPECTROSCOPY, SPECTROSCOPIC ANALYSIS (U)

THE EXHAUST FROM JET ENGINES CONTAINS MANY POLLUTANT GAS SPECIES. AT THE PRESENT TIME A CONVENIENT, RELIABLE METHOD IS NEEDED TO MONITOR THEIR CONCENTRATIONS. THERE ARE MANY DIFFERENT METHODS AVAILABLE FOR DETERMINING CONCENTRATIONS OF POLLUTANT GASES IN THE EFFLUENT FROM SMOKESTACKS, AIRCRAFT, AUTOMOBILES AND OTHER POLLUTIONS SOURCES. EACH METHOD HAS ITS MERITS AND ITS DIFFICULTIES DEPENDING ON THE APPLICATION. A CLASS OF INSTRUMENTS EMPLOYING GAS-CELL CORRELATION SPECTROSCOPY TO PROVIDE GOOD SENSITIVITY AND SPECIFICITY AT RELATIVELY LOW COST HAS BEEN DEVELOPED FOR A VARIETY OF APPLICATIONS. AN INFRARED INSTRUMENT USING A GAS-FILTER CORRELATION TECHNIQUE WAS USED TO IN-SITU MONITOR NO AND CO IN THE EXHAUST PLUME OF A T56 JET ENGINE COMBUSTOR. THE INSTRUMENT, BUILT PREVIOUSLY BY AERONUTRONIC FORD FOR EPA TO MONITOR POLLUTANT GASES IN SMOKESTACK EXHAUSTS, WAS MODIFIED FOR USE ON THE COMBUSTOR. TEMPERATURES AND CONCENTRATIONS RANGED FROM 300 TO 930K AND UP TO 130 PPM FOR NO; FOR CO FROM 300 TO 550K AND UP TO 220 PPM. OPTICAL RESULTS WERE OBTAINED SIMULTANEOUSLY BY WITHDRAWING THE SAMPLE USING PROBE TECHNIQUES AND ANALYZING THE GAS WITH A CONVENTIONAL GAS ANALYZER. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A022 671 13/2 21/9.2 21/8.2
NAVAL WEAPONS CENTER CHINA LAKE CALIF

ENVIRONMENTAL STUDY OF TOXIC EXHAUSTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. FEB 73-SEP 74,
FEB 76 104P NADLER,MELVIN P. ;
PROJ: AF-5730
TASK: 573073
MONITOR: AFRPL TR-76-13

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *SOLID PROPELLANT ROCKET ENGINES, *ROCKET EXHAUST, ROCKET LAUNCHING, ADSORPTION, CARBON MONOXIDE, AFTERBURNERS, HYDROGEN CHLORIDE, ALUMINUM COMPOUNDS, ISOTHERMS, CHEMICAL AGENT DETECTORS, EXHAUST PLUMES, NITROGEN OXIDES, AEROSOLS, METEOROLOGICAL DATA, WASTE MANAGEMENT, OXIDES, CONCENTRATION(CHEMISTRY), LAUNCH VEHICLES, ROCKET EXHAUST (U)
IDENTIFIERS: TITAN (U)

SOME ASPECTS OF THE ENVIRONMENTAL HAZARD OF LARGE SOLID ROCKET MOTORS HAVE BEEN INVESTIGATED. ADSORPTION EXPERIMENTS OF HCL(G) AND CO(G) ONTO AL2O3 WERE PERFORMED. THE AFTERBURNING OF CO TO CO2 WAS FOUND TO BE 99% COMPLETE. THE GROUND CLOUD PRODUCED DURING A TITAN LAUNCH WOULD CONTAIN 9 PPM CO INITIALLY AND 50-82 PPM CO IF THE TOTAL BURN OCCURRED ON THE PAD. HYDROGEN CHLORIDE AND NITRIC OXIDE MEASUREMENTS WERE MADE IN THE GROUND CLOUDS PRODUCED FROM SMALL SOLID ROCKET MOTORS. EXPERIMENTS INDICATED THAT LOWER THAN THERMODYNAMICALLY PREDICTED NO CONCENTRATIONS EXIST IN THE GROUND CLOUD. THE HCL DOSAGES MEASURED SHOW THE HCL IN THE INTIAL GROUND CLOUD TO BE APPROXIMATELY THAT PREDICTED THERMODYNAMICALLY. THE INITIAL GROUND CLOUD IS NON-HOMOGENEOUS IN HCL AND NO, AND HCL(G) WAS FOUND OUTSIDE THE VISIBLE CLOUD. EXPERIMENTS WERE ALSO PERFORMED COMPARING FIVE DIFFERENT HCL DETECTORS UNDER FIELD CONDITIONS. THE INSTRUMENT COMPARISON SHOWED THAT LITTLE HCL AEROSOL EXISTS IN THE TURBULENT GROUND CLOUD FOR RELATIVE HUMIDITIES LESS THAN 30%. ALSO, THE HCL TIED TO PARTICLES IS MUCH HIGHER THAN WHAT WOULD BE PREDICTED FROM LABORATORY EXPERIMENTS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A022 846 13/2 21/9.2
SPACE AND MISSILE TEST CENTER VANDENBERG AFB CALIF

PH MONITOR OF AIR POLLUTANTS, RESEARCH AND DEVELOPMENT OF A NEW PH RECORDING METHOD AND INSTRUMENTS FOR THE RECORDING OF ACID AND/OR BASIC COMPONENTS RESULTING FROM LAUNCHES OF ROCKETS. (U)

DESCRIPTIVE NOTE: FINAL REPT. SEP 72-MAR 75, MAY 75 88P HENDEL,FRANK J. ;
REPT. NO. SAMTEC-TR-75-190

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *PH METERS, *ROCKET EXHAUST, MONITORS, SOLID ROCKET PROPELLANTS, ELECTRODES, CONCENTRATION(CHEMISTRY), PH FACTOR, PROTOTYPES, CALIBRATION, TEST METHODS, RECORDING SYSTEMS, SOLID FUELS, ROCKET LAUNCHING (U)

VARIOUS METHODS AND INSTRUMENTS WERE INVESTIGATED FOR USE IN MONITORING ACIDITY AND ALKALINITY OF EFFLUENTS RESULTING FROM LAUNCHES OF LARGE ROCKETS, ESPECIALLY THOSE USING SOLID ROCKET MOTORS. AN INEXPENSIVE, PORTABLE, BATTERY-OPERATED PH RECORDER WAS MODIFIED TO MONITOR EFFLUENT OR SPILLED POLLUTANTS DURING NORMAL OR CATASTROPHIC LAUNCHES OF LARGE ROCKETS. TWO PROTOTYPE PH MONITORS WERE CONSTRUCTED AND USED DURING FIRINGS OF 15 SOLID ROCKET MOTORS. THE DATA FROM ALL RECORDINGS WERE REDUCED TO READ THE FLUCTUATIONS OF CONCENTRATIONS AND DOSE (EXPOSURE) IN THE AIR AT VARIOUS DISTANCES FROM THE FIRINGS. ALL RECORDINGS WERE PERFORMED ON STRIP CHARTS. TAPE RECORDING WAS ALSO TESTED; IT IS CHEAPER AND LENDS ITSELF FOR FUTURE COMPUTERIZED AUTOMATION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A023 085 21/9.2 6/10 13/2
JOHNS HOPKINS UNIV LAUREL MD CHEMICAL PROPULSION INFORMATION AGENCY

HYDROGEN CHLORIDE DETECTION, MEASUREMENT AND MONITORING, (U)

DEC 75 42P GAARDER, D. S. ; JENSEN, A. V. ;
REPT. NO. CPIA-PUB-272
CONTRACT: N00017-72-C-4401

UNCLASSIFIED REPORT
AVAILABILITY: PAPER COPY AVAILABLE FROM CHEMICAL PROPULSION INFORMATION AGENCY, LAUREL, MD. 20810.

DESCRIPTORS: *SOLID ROCKET OXIDIZERS, *OCCUPATIONAL DISEASES, *HYDROGEN CHLORIDE, COMBUSTION, MONITORING, AIR POLLUTION, MEASUREMENT, AMMONIUM PERCHLORATE, TOXICITY, ENVIRONMENTS, TEST METHODS, STANDARDS, ROCKET LAUNCHING, CHEMICAL INDICATORS, CHEMICAL AGENT DETECTORS, TOXIC HAZARDS, SOLID ROCKET PROPELLANTS, COMBUSTION CHAMBER GASES (U)
IDENTIFIERS: *AIR POLLUTION DETECTION, *AIR POLLUTION SAMPLING (U)

RESULTS ARE PRESENTED OF A COMPREHENSIVE SURVEY OF METHODS FOR DETECTING, MEASURING AND MONITORING HYDROGEN CHLORIDE RESULTING FROM COMBUSTION OF PROPELLANTS CONTAINING AMMUNIUM PERCHLORATE. TECHNIQUES FOR SAMPLING AND ANALYSES, COMMERCIALLY AVAILABLE INSTRUMENTS, AND INSTRUMENT TECHNIQUES UNDER DEVELOPMENT ARE DESCRIBED. THE SURVEY IS INTENDED TO PROVIDE INFORMATION WHICH WILL ALLOW SELECTION OF THE OPTIMUM MEASUREMENT TECHNIQUE FOR A GIVEN APPLICATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A023 194 18/4
HARRY DIAMOND LABS ADELPHI MD

ANALYSIS OF THE GAS-STACK MONITOR CALIBRATION DATA FOR THE DIAMOND ORDNANCE RADIATION FACILITY. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,
OCT 75 17P WRIGHT,THOMAS P. ;
REPT. NO. HDL-TM-75-19
PROJ: HDL-290E28

UNCLASSIFIED REPORT

DESCRIPTORS: *RADIATION MONITORS, *RADIOACTIVE WASTES, *CALIBRATION, MONITORING, EXHAUST GASES, RADIOACTIVE WASTES, ARGON, DATA PROCESSING, RADIATION HAZARDS, RADIOLOGICAL LABORATORIES, RADIOACTIVE ISOTOPES, COMPUTER PROGRAMS (U)
IDENTIFIERS: SOFTWARE, *AIR POLLUTION DETECTION, AIR POLLUTION SAMPLING (U)

IN ORDER TO EFFECTIVELY MONITOR THE RELEASE OF RADIOACTIVE ARGON-41 GAS FROM THE DORF SITE, IT IS NECESSARY TO PERIODICALLY CALIBRATE THE MONITORING EQUIPMENT. THIS REPORT REVIEWS THE ANALYSIS OF THE CALIBRATION CASE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A023 662 13/2
WISCONSIN UNIV MADISON DEPT OF STATISTICS

COMPARISON OF FORECASTS AND ACTUALITY. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
MAY 75 23P BOX,G. E. P. ;TIAO,G.
C. ;
REPT. NO. UWIS-DS-75-402
CONTRACT: DA-ARO-D-31-124-72-G162

UNCLASSIFIED REPORT

DESCRIPTORS: *TIME SERIES ANALYSIS, *OZONE, *AIR POLLUTION, FORECASTING, TRANSFER FUNCTIONS, COMPUTATIONS, MATHEMATICAL MODELS, CONCENTRATION(COMPOSITION), AUTOMOTIVE VEHICLES, EXHAUST GASES (U)
IDENTIFIERS: AZUSA(CALIFORNIA), *ATMOSPHERIC COMPOSITION (U)

IN THE ANALYSIS OF TIME SERIES DATA, IT IS FREQUENTLY OF INTEREST TO COMPARE A SET OF FORECASTS MADE AT SOME TIME POINT WHEN A CHANGE IN LEVEL IS SUSPECTED TO HAVE TAKEN PLACE WITH ACTUAL OBSERVATIONS. THIS PAPER DISCUSSES VARIOUS STATISTICAL TECHNIQUES FOR MAKING SUCH COMPARISONS, AND ILLUSTRATES THESE TECHNIQUES IN TERMS OF AN ACTUAL EXAMPLE CONCERNING THE MONTHLY AVERAGES OF ATMOSPHERIC OZONE CONCENTRATION OF AZUSA, CALIFORNIA. THIS PARTICULAR COMPARISON IS OF INTEREST BECAUSE NEW AUTOMOBILE EMISSIONS STANDARDS THAT WERE INTRODUCED AT THE END OF 1970. THESE MEASURES MIGHT HAVE REDUCED OZONE BELOW LEVELS EXPECTED IF NO NEW STANDARDS HAD BEEN INTRODUCED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A026 546 21/4 21/5 13/2
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB OHIO

THE IMPACT OF JP-4/JP-8 CONVERSION ON AIRCRAFT ENGINE EXHAUST EMISSIONS. (U)

DESCRIPTIVE NOTE: INTERIM TECHNICAL REPT. JUL 75-FEB 76,
MAY 76 52P BLAZOWSKI,WILLIAM S. ;
REPT. NO. AFAPL-TR-76-20
PROJ: AF-3048
TASK: 304805

UNCLASSIFIED REPORT

DESCRIPTORS: *JET ENGINE FUELS, *EXHAUST GASES, *TURBOJET ENGINES, *EMISSION, AIR POLLUTION, CONVERSION, COMBUSTORS, HYDROCARBONS, NITROGEN OXIDES, CARBON MONOXIDE, SMOKE, PARTICULATES, COMBUSTION (U)
IDENTIFIERS: J-85 ENGINES, J-85-GE-5 ENGINES, JP-4 FUEL, JP-8 FUEL (U)

THE PROPOSED CONVERSION OF PREDOMINANT AIR FORCE FUEL USAGE FROM JP-4 TO JP-8 HAS CREATED THE NEED TO EXAMINE THE DEPENDENCE OF ENGINE POLLUTANT EMISSION ON FUEL TYPE. AVAILABLE DATA CONCERNING THE EFFECT OF FUEL TYPE ON EMISSIONS HAS BEEN REVIEWED. T56 SINGLE COMBUSTOR TESTING HAS BEEN UNDERTAKEN TO DETERMINE JP-4/JP-8 EMISSION VARIATIONS OVER A WIDE RANGE OF SIMULATED ENGINE CYCLE OPERATING CONDITIONS AT IDLE. IN ADDITION, A J85-5 ENGINE WAS TESTED USING JP-4 AND JP-8. RESULTS OF THE PREVIOUS AND NEW DATA COLLECTIVELY LED TO THE FOLLOWING CONCLUSIONS REGARDING CONVERSION TO JP-8: (A) HC AND CO EMISSION CHANGES WILL DEPEND UPON INDIVIDUAL COMBUSTOR DESIGN FEATURES, (B) NO CHANGE TO NOX EMISSION WILL OCCUR, AND (C) AN INCREASE IN SMOKE/PARTICULATE EMISSIONS WILL RESULT. IT IS RECOMMENDED THAT THESE FINDINGS BE INCORPORATED INTO AIR QUALITY ANALYTICAL MODELS TO DEFINE THE OVERALL IMPACT OF THE PROPOSAL CONVERSION. FURTHER, IT IS RECOMMENDED THAT COMBUSTOR ANALYTICAL MODELS BE EMPLOYED TO ATTEMPT PREDICTION OF THE RESULTS DESCRIBED HEREIN. SHOULD THESE MODELS BE SUCCESSFUL, ANALYTICAL PREDICTION OF JP-8 EMISSIONS FROM OTHER AIR FORCE ENGINE MODELS MAY BE SUBSTITUTED FOR MORE COMBUSTOR RIG OR ENGINE TESTING. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A026 837 6/6 13/2
CALIFORNIA UNIV IRVINE

ENVIRONMENTAL QUALITY RESEARCH. THE PHYTOTOXICITY OF MISSILE EXHAUST PRODUCTS: SHORT TERM EXPOSURES OF PLANTS TO HCL, HF AND AL(2)03. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 2, 16 JUN 74-31 MAY 75,
MAY 76 53P LERMAN,SHIMSHON ;
CONTRACT: F33615-73-C-4059
PROJ: AF-6302
TASK: 630204
MONITOR: AMRL TR-75-102

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED FEB 75, AD-A011 558.

DESCRIPTORS: *HYDROGEN CHLORIDE, *HYDROGEN FLUORIDE, *ALUMINA, *PLANTS(BOTANY), *EXHAUST GASES, AIR POLLUTION, PARTICULATES, GASES, PLANT GROWTH, PLANT TISSUE, TOXICITY, EXPERIMENTAL DATA (U)
IDENTIFIERS: ENVIRONMENTAL QUALITY, *AIR POLLUTION EFFECTS(PLANTS), BIOINDICATORS, MISSILES (U)

EIGHT SPECIES OF ORNAMENTALS AND THREE GARDEN PLANTS WERE SELECTED IN ORDER TO DETERMINE THE RANGE OF PHYTOTOXIC RESPONSES TO HYDROGEN CHLORIDE, HYDROGEN FLUORIDE AND ALUMINA PARTICLES. THE EXPERIMENTAL PLANTS WERE GROWN IN A GREENHOUSE OR GROWTH CHAMBERS OR GROWTH CHAMBERS UNDER CONTROLLED CONDITIONS. TWO EXPOSURE CHAMBERS WERE CONSTRUCTED TO ACCOMODATE THE EXPOSURE OF PLANTS TO BOTH GASEOUS AND PARTICULATE POLLUTANTS. METHODS AND EQUIPMENT FOR THE GENERATION, DISPENSING AND MONITORING OF POLLUTANTS WERE ESTABLISHED. PLANTS OF VARIOUS AGE LEVELS FROM EACH SPECIES WERE EXPOSED TO THE MISSILE PRODUCTS AT VARIOUS CONCENTRATIONS FOR PERIODS OF 10 OR 20 MINUTES EACH. PLANTS RECEIVED A SINGLE EXPOSURE FOR PHYTOTOXIC RANGE-FINDING STUDIES AS WELL AS MULTIPLE EXPOSURE TO DETERMINE CUMULATIVE EFFECTS OF TOXICANTS. GROWTH CONDITIONS SUCH AS TEMPERATURE, RELATIVE HUMIDITY AND LIGHT INTENSITY WHICH COULD AFFECT PLANT RESPONSES WERE ALSO UNDER INVESTIGATION. THE EXPOSED PLANTS WERE EVALUATED 24 TO 48 HOURS AFTER EXPOSURE AND INJURY SYMPTOMS WERE RECORDED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A029 176 13/2 13/6 15/5
VALUE ENGINEERING CO OXNARD CALIF

ENVIRONMENTAL PROTECTION GUIDE, (U)

AUG 75 254P DEZARALA,W. H. ;CRADER , C. L. ;LEVASSEUR ,C. J. ;
REPT. NO. ED-6153
CONTRACT: N62578-74-C-0034

UNCLASSIFIED REPORT

DESCRIPTORS: *ENVIRONMENTAL PROTECTION, *GUIDES, *NAVAL PROCUREMENT, *POLLUTION ABATEMENT, *MILITARY VEHICLES, *AIR POLLUTION CONTROL EQUIPMENT, *AIR POLLUTION, NAVAL EQUIPMENT, SPECIFICATIONS, PASSENGER VEHICLES, TRUCKS, EARTH HANDLING EQUIPMENT, TRACTORS, TRAILERS, ROLLERS, COMPACTORS, HEAVY DUTY, VEHICLES, STANDARDS, NOISE POLLUTION, INTERNAL COMBUSTION ENGINES, EMISSION CONTROL, HYDROCARBONS, CARBON MONOXIDE, NITROGEN OXIDES, CRANKCASES, EVAPORATION, SMOKE, EXHAUST GASES, TABLES(DATA), INDUSTRIAL EQUIPMENT, MOTORCYCLES (U)

THIS ENVIRONMENTAL PROTECTION GUIDE WAS PREPARED UNDER CONTRACT N62578-74-C-0034 ISSUDED BY THE NAVAL FACILITIES ENGINEERING COMMAND, DAVISVILLE, RHODE ISLAND AND SUMMARIZES ALL PERTINENT INFORMATION IN A READILY ACCESSIBLE FORMAT. IT IS INTENDED FOR THE USE OF NAVY PERSONNEL INVOLVED OR CONCERNED WITH THE PREPARATION AND/OR UPDATING OF MILITARY OR FEDERAL SPECIFICATIONS UTILIZED FOR PROCUREMENT OF INDUSTRIAL EQUIPMENTS CAPABLE OF EMITTING SPECIFIED POLLUTANTS OR EXCEEDING ESTABLISHED NOISE-LEVEL CRITERIA. THIS DOCUMENT IS EXPECTED TO SERVE AS THE PRIMARY CONSOLIDATED DATA SOURCE FOR ALL AVAILABLE INFORMATION RELATING TO EXISTING AND ANTICIPATED EMISSIONS CONTROL STANDARDS AND GOALS AT BOTH THE STATE AND FEDERAL LEVELS; FOR THE MANUFACTURING SOURCES AND ASSOCIATED CONFIGURATIONS OF THE PRIME EQUIPMENTS AVAILABLE TO SATISFY EXPECTED FUTURE NAVY PROCUREMENT NEEDS, AND WHICH MUST INCORPORATE ADEQUATE PROTECTIVE DESIGN FEATURES OR DEVICES TO MEET ESTABLISHED POLLUTION CONTROL REQUIREMENTS; AND FOR THE TYPES, SOURCES, AND CAPABILITIES OF THE COMMERCIALLY AVAILABLE POLLUTION CONTROL DEVICES/ EQUIPMENTS WHICH MAY BE DESIGNATED, AS APPROPRIATED, IN NAVY PROCUREMENT ACTIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A029 369 21/7
HARRY DIAMOND LABS ADELPHI MD

SELECTIVE ANALYSIS FOR CARBON MONOXIDE, HYDROCARBONS, AND NITRIC OXIDE IN A STREAM OF INTERNAL COMBUSTION ENGINE EXHAUST GASES: A LITERATURE SURVEY. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,
AUG 76 25P SHEFFER,PETER C. ;BOYD,J. MICHAEL ;
REPT. NO. HDL-TM-76-15
PROJ: DA-1-T-161101-A-91-A

UNCLASSIFIED REPORT

DESCRIPTORS: *INTERNAL COMBUSTION ENGINES, LITERATURE SURVEYS, OXIDATION, NITROGEN OXIDES, DIESEL ENGINES, CARBON MONOXIDE, HYDROCARBONS, AUTOMOBILE EXHAUST, EXHAUST GASES (U)
IDENTIFIERS: *EXHAUST ANALYZER (U)

THIS PAPER REPORTS A LITERATURE SURVEY ON THE METHODS OF SELECTIVE ANALYSIS FOR THE EXHAUST GASES INCLUDING CARBON MONOXIDE, HYDROCARBONS, AND NITRIC OXIDE. PARTICULAR INTEREST IS PAID TO THOSE METHODS THAT HAVE THE POTENTIAL TO BE ADAPTED TO THE DESIGN OF A PROCESSOR FOR THE ANALYZER. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A030 005 14/2 21/5 7/4

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

COMPARISON OF UV ABSORPTION MEASUREMENTS WITH PROBE-SAMPLING MEASUREMENTS OF NITRIC OXIDE CONCENTRATION IN A JET ENGINE COMBUSTOR EXHAUST. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 APR-1 JUL 75, SEP 76 33P FEW,J. D. ;MCGREGOR,W. K. ;GLASSMAN,H. N. ;

REPT. NO. AEDC-TR-76-134

PROJ: ARO-R32P-A6A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO, INC., TULLAHOMA, TENN., REPT. NO. ARO-ETF-TR-76-77.

DESCRIPTORS: *EXHAUST GASES, *NITROGEN OXIDES, *ULTRAVIOLET SPECTROSCOPY, *ABSORPTION SPECTRA, *JET ENGINES, AIR POLLUTION, RESONANCE ABSORPTION, BAND SPECTRA, COMBUSTORS, TURBOPROP ENGINES, CONCENTRATION(CHEMISTRY), EMISSION, PRESSURE, TEMPERATURE, GAS ANALYSIS, PROBES, COMPARISON (U)

IDENTIFIERS: *NITRIC OXIDE (U)

MEASUREMENTS WERE MADE IN THE EXHAUST OF A T-56 TURBINE ENGINE COMBUSTOR OF NITRIC OXIDE (NO) CONCENTRATION USING AN ULTRAVIOLET (UV) SPECTRAL ABSORPTION TECHNIQUE. THE MEASUREMENTS WERE MADE AT TWO AXIAL LOCATIONS IN THE COMBUSTOR EXHAUST STREAM. THE NO GAMMA-BAND RADIATION AT 2265 A PRODUCED IN A RESONANCE SOURCE WAS PASSED THROUGH THE EXHAUST STREAM, AND THE AMOUNT TRANSMITTED WAS RECORDED. THE MATHEMATICAL MODEL USED TO DETERMINE THE NO CONCENTRATION FROM THE ABSORPTION MEASUREMENTS IS DESCRIBED. PRESSURE AND TEMPERATURE BROADENING EFFECTS ON THE MEASURED ABSORPTION ARE CONSIDERED IN THE LINE-BY-LINE TRANSMISSION CALCULATION. THE LINE-OF-SIGHT ABSORPTION MEASUREMENTS THROUGH THE AXISYMMETRIC EXHAUST STREAM WERE CONVERTED TO LOCAL CONCENTRATION VALUES VIA AN ITERATIVE RADIAL INVERSION COMPUTATION. THESE IN SITU MEASUREMENTS ARE COMPARED TO NO CONCENTRATION VALUES OBTAINED BY CONVENTIONAL PROBE-SAMPLING TECHNIQUES USING A CHEMILUMINESCENT ANALYZER. THE IN SITU MEASUREMENTS OF THE NO CONCENTRATION WERE LARGER THAN THE PROBE-SAMPLED MEASUREMENTS BY FROM 50 TO 80 PERCENT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A030 100 13/2 21/5
UNITED ENGINEERS AND CONSTRUCTORS INC BOSTON MASS

TEST AND EVALUATION OF A PILOT TWO-STAGE PRECIPITATOR FOR JET ENGINE TEST CELL EXHAUST GAS CLEANING. (U)

APR 76 117P
CONTRACT: N6267-74-C-0161, N00025-72-C-0037

UNCLASSIFIED REPORT

DESCRIPTORS: *EMISSION, *JET ENGINES, *TEST FACILITIES, *POLLUTION ABATEMENT, *ELECTROSTATIC PRECIPITATION, EXHAUST GASES, TEST EQUIPMENT, CELLS, NAVAL AIRCRAFT, PROTOTYPES, PERFORMANCE(ENGINEERING), COSTS, COST ESTIMATES (U)
IDENTIFIERS: *TWO STAGE ELECTROSTATIC PRECIPITATORS (U)

FINDINGS OF A STUDY FOR THE ABATEMENT OF AIR POLLUTION CAUSED BY OPERATION OF NAVAL JET ENGINE TEST FACILITIES, ISSUED IN AUGUST 1973, WERE THAT THE USE OF FUEL ADDITIVES, THE RETROFIT OF SMOKELESS COMBUSTORS AND THE INSTALLATION OF GAS CLEANING EQUIPMENT WERE POTENTIAL MEANS OF CONTROLLING PARTICULATE EMISSIONS FROM THE CELLS. ADDITIVES AND SMOKELESS COMBUSTORS WERE FOUND TO REQUIRE ADDITIONAL DEVELOPMENT LEAVING EXHAUST GAS CLEANING AS THE ONLY TECHNOLOGY THEN AVAILABLE FOR EMISSION CONTROL. A TWO-STAGE ELECTROSTATIC PRECIPITATOR WAS RECOMMENDED AS THE MOST VIABLE ALTERNATIVE TO A CONCEPT THEN BEING ACTIVELY DEVELOPED, THE CROSS-FLOW WET SCRUBBER. DUE TO THE UNIQUE NATURE OF THE APPLICATION AND THE HGIH COST OF FULL-SIZED EQUIPMENT, IT WAS RECOMMENDED THAT A BENCH SCALE PRECIPITATOR BE TESTED TO CONFIRM PERFORMANCE AND ESTABLISH SIZE PARAMETERS. SUCH A PROTOTYPE UNIT WAS SUBSEQUENTLY INSTALLED AT BLACK POINT TEST CELL NO. 1, NAVAL AIR REWORK FACILITY, JACKSONVILLE, FLORIDA AND UNDERWENT A SEQUENCE OF PERFORMANCE AND OPERATING TESTS UNDER THE SUPERVISION OF UE AND C. THIS REPORT SUMMARIZES THE RESULTS OF THE TEST PROGRAM AND PROVIDES DATA ON THE ECONOMICS OF APPLYING A FULL-SCALE SYSTEM TO A JET ENGINE TEST CELL. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A030 373 15/2
TRACOR INC AUSTIN TEX

DEVELOPMENT OF AN AUTOMATED MUSTARD STACK MONITOR. PHASE II. (U)

DESCRIPTIVE NOTE: FINAL REPT. DEC 75-JUN 76, JUN 76 29P EHRLICH,BURNEY J. ;SPENCER, SAMUEL F. ;
CONTRACT: DAAA15-75-C-0070
MONITOR: EC CR-76084

UNCLASSIFIED REPORT

DESCRIPTORS: *MUSTARD AGENTS, *AIR POLLUTION CONTROL EQUIPMENT, EXHAUST GASES, GAS CHROMATOGRAPHY, MONITORS, AUTOMATION, OPERATIONAL TEST AND EVALUATION (U)

THE DETAILS OF DESIGN, DEVELOPMENT AND TESTING OF AN AUTOMATED STACK ANALYZER CAPABLE OF MONITORING MUSTARD GAS AT LEVELS OF 0.03 MG/CU.M. ARE GIVEN. OPERATING CONDITIONS AND ANALYTICAL PROCEDURE ARE GIVEN. RESULTS ARE DESCRIBED. THE TRACOR 270HA ATMOSPHERIC ANALYZER, BY SEVERAL MODIFICATIONS, WAS TRANSFORMED INTO THE MODEL 275HA MUSTARD ANALYZER, FOUND TO GIVE ADEQUATE RESULTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A030 557 13/2 6/19
ARMY MEDICAL INTELLIGENCE AND INFORMATION AGENCY
WASHINGTON D C

MAXIMUM PERMISSIBLE CONCENTRATIONS OF ATMOSPHERIC POLLUTANTS (PREDEL NO DOPUSTIMYYE KONTSENTRATSII ARMOSFERYKH ZAGRYAZNENIY), (U)

SEP 76 23P IZMEROV,N. F. ;
REPT. NO. USAMIIA-K-6558

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MEDYIZ (USSR) P3-4 73-93 1961.

DESCRIPTORS: *AIR POLLUTION, *AIR POLLUTION EFFECTS(ANIMALS), HUMANS, PHYSIOLOGICAL EFFECTS, THRESHOLDS(PHYSIOLOGY), CONCENTRATION(COMPOSITION), TOXICITY, RECOVERY, AUTOMOBILE EXHAUST, INDUSTRIAL PLANTS, HYDROCARBONS, NAPHTHALENES, AVIATION GASOLINE, GASOLINE, USSR, TRANSLATIONS (U)
IDENTIFIERS: NAPHTHA (U)

CHRONIC EXPOSURE TO GALOSHA NAPHTHA VAPOR IN A CONCENTRATION OF 106.5 MG CU M FOR 5 MONTHS FOR 6 HOURS A DAY CAUSES FUNCTIONAL CHANGES OF THE CONDITIONED REFLEXIVE ACTIVITY IN EXPERIMENTAL ANIMALS THAT BUILD IN PROPORTION TO EXPOSURE AND APPEAR TWO WEEKS AFTER TERMINATING EXPOSURE. THE REFLEX ACTION OF GALOSHA NAPHTHA VAPOR ON LIGHT SENSITIVITY OF THE EYE IS ONLY OBSERVED AT A CONCENTRATION OF 56 MG/CUM OR HIGHER. THE MOST SENSITIVE INDICATOR FOR ESTABLISHING THE MAXIMUM PERMISSIBLE CONCENTRATION OF GASOLINE VAPOR IN ATMOSPHERIC AIR IS THE THRESHOLD OF ODOR. TAKING INTO ACCOUNT THE NEED FOR A CERTAIN RESERVE FACTOR AND THE SLIGHT DIFFERENCE IN THE THRESHOLD OF ODOR FOR THE INVESTIGATED TYPES OF GASOLINE, ONE CAN RECOMMEND 5 MG/CU M (IN RECALULATION FOR CARBON) AS THE MAXIMUM SINGLE PERMISSIBLE CONCENTRATION FOR THE TYPES OF LOW SULFUR PETROLEUM GASOLINE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A031 233 21/2 21/5 13/2
CALIFORNIA UNIV IRVINE COMBUSTION LAB

MECHANISMS OF EXHAUST POLLUTANTS AND PLUME FORMATION IN CONTINUOUS COMBUSTION. (U)

DESCRIPTIVE NOTE: INTERIM SCIENTIFIC REPT. NO. 2, 1 MAY 75-28 FEB 76,
JUN 76 84P SAMUELSEN,G. S. ;
REPT. NO. UCI-ARTR-76-10
CONTRACT: AF-AFOSR-2710-74
PROJ: AF-9711
TASK: 971102
MONITOR: AFOSR TR-76-1122

UNCLASSIFIED REPORT

DESCRIPTORS: *COMBUSTION, *GAS TURBINES, *COMBUSTORS, *EMISSION, *AIR POLLUTION, *EXHAUST PLUMES, MATHEMATICAL MODELS, MATHEMATICAL PREDICTION, METHANE, PROPANE, OXIDATION, NITROGEN OXIDES, TURBULENT FLOW, FLOW FIELDS, MASS TRANSFER, SPECTRUM SIGNATURES, COMBUSTION PRODUCTS, EXHAUST GASES (U)
IDENTIFIERS: CONTINUOUS COMBUSTION, BACKMIXING (U)

AN ANALYTICAL AND EXPERIMENTAL STUDY IS BEING CONDUCTED TO PROMOTE AN UNDERSTANDING OF THE PROCESSES GOVERNING THE EMISSION CHARACTERISTICS OF CONTINUOUS COMBUSTION POWER SOURCES AND THUS PROVIDE A BASIS FOR REDUCING ADVERSE ENVIRONMENTAL EFFECTS AND FOR CONTROLLING PLUME SIGNATURES RESULTING FROM AIRCRAFT OPERATIONS. THE MODELING DEVELOPMENT CAN, IN ADDITION, BE READILY ADAPTED TO DUMP COMBUSTOR AND GAS TURBINE COMBUSTION. THE CONFIGURATION CHOSEN FOR THE STUDY IS AN OPPOSED-JET LABORATORY COMBUSTOR (OJC). THREE NUMEPICAL PROGRAMS ARE USED FOR MODELING PURPOSES. THE CURRENT YEAR HAS EMPHASIZED THE UTILITY AND RANGE OF APPLICABILITY OF THE NUMERICAL METHODS FOR THE CASE OF ISOTHERMAL FLOW. EDDY VISCOSITY MODELS AND BOUNDARY CONDITION SPECIFICATION HAVE RECEIVED THE GREATEST EMPHASIS IN A SERIES OF SYSTEMATIC TEST OF PREDICTION AGAINST EXPERIMENT. THE NUMERICAL METHODS ARE CURRENTLY BEING EXPANDED TO INCLUDE PROPANE AS WELL AS METHANE OXIDATION KINETICS. EVALUATION OF THE NUMERICAL CODES FOR THE CASE OF HOT, REACTING FLOW WILL BE THE EMPHASIS OF THE CONTINUATION YEAR. PREHEAT CAPABILITY HAS BEEN ADDED TO THE EXPERIMENTAL DIMENSION OF THE STUDY. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A031 860 21/4 6/20
CALIFORNIA UNIV IRVINE

TOXIC HAZARDS RESEARCH UNIT ANNUAL TECHNICAL REPORT: 1976. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 75-MAY 76, SEP 76 182P MACEWEN,J. D. ;VERNOT,E. H. ;
CONTRACT: F33615-76-C-5005
MONITOR: AMRL TR-76-57

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: INCLUDES ERRATA SHEET DATED SEP 76.

DESCRIPTORS: *JET ENGINE FUELS, *TOXIC HAZARDS, *ROCKET PROPELLANTS, LONG RANGE(TIME), LIVER, NITROTOLUENES, METHYL HYDRAZINES, CARCINOGENS, TOXICITY, COAL TAR, ORAL DOSAGE, INHALATION, SKIN TESTS, NITROSAMINES, CHLORIDES, FLUORIDES, ALUMINA, SKIN(ANATOMY), INDUSTRIAL HYGIENE, AIR POLLUTION, MUNITIONS INDUSTRY, HAZARDOUS MATERIALS TRANSPORTATION, GROWTH(PHYSIOLOGY), LABORATORY ANIMALS (U)
IDENTIFIERS: JP-4 FUELS, RJ-4 FUELS, RJ-5 FUELS, HYDRAZINE/1-1-DIMETHYL, NITROSAMINE/DIMETHYL, TETRANITRO METHANE, METHYL NITRATE (U)

THE RESEARCH PROGRAMS OF THE TOXIC HAZARDS RESEARCH UNIT (THRU) FOR THE PERIOD OF JUNE 1975 THROUGH MAY 1976 ARE REVIEWED IN THIS REPORT. CHRONIC TOXICITY EXPERIMENTS WERE CONDUCTED USING JP-4, RJ-4 (PERHYDROMETHYLCYCLOPENTADIENE) AND RJ-5 (REDUCED DIMERS OF BICYCLOPENTADIENE) JET FUELS. STUDIES WERE CARRIED OUT ON THE ONCOGENICITY OF HYDRAZINE, 1,1-DIMETHYLHYDRAZINE AND COAL TAR AEROSOL. THE HEPATOTOXICITY OF DIMETHYLNITROSAMINE WAS INVESTIGATED BY THE ORAL ROUTE AND, IN CONJUNCTION WITH 1,1-DIMETHYLHYDRAZINE, BY THE INHALATION ROUTE. ACUTE RODENT TOXICITIES OF HYDROGEN CHLORIDE, HYDROGEN FLUORIDE AND THEIR MIXTURES WITH AND WITHOUT ALUMINA DUST WERE DETERMINED. THE ACUTE EFFECTS OF TETRANITROMETHANE, THE ISOMERIC NITROTOLUENES AND METHYL NITRATE BY VARIOUS ROUTES OF ADMINISTRATION WERE EXAMINED. ORAL, CUTANEOUS AND INHALATION TOXICITY DETERMINATIONS AND SKIN CORROSION STUDIES WERE MADE ON A NUMBER OF TRANSPORTABLE CHEMICAL AGENTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A031 923 21/5 13/2

NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC CITY N J

AMBIENT TEMPERATURE AND HUMIDITY CORRECTION FACTORS FOR EXHAUST EMISSIONS FROM TWO CLASSES OF AIRCRAFT TURBINE ENGINES. (U)

DESCRIPTIVE NOTE: FINAL REPT. FEB 74-AUG 75, OCT 76 113P ALLEN,LOUIS ;SLUSHER,GERALD R. ;

REPT. NO. FAA-NA-76-16

PROJ: FAA-201-521-000

MONITOR: FAA-RD 76-149

UNCLASSIFIED REPORT

DESCRIPTORS: *AIRCRAFT ENGINES, *AIR POLLUTION, *EXHAUST GASES, CARBON MONOXIDE, HUMIDITY, TEMPERATURE, HYDROCARBONS, TURBOFAN ENGINES, TURBOJET ENGINES, NITROGEN OXIDES, TABLES(DATA), SAMPLING, PRESSURE (U)

IDENTIFIERS: J-57-43 ENGINES, JT3D ENGINES, TF-30-P1 ENGINES, GAS TURBINE ENGINES (U)

CORRECTION COEFFICIENTS TO REDUCE THE PRODUCTION OF EXHAUST EMISSIONS TO STANDARD-DAY CONDITIONS FOR AMBIENT TEMPERATURE AND HUMIDITY WERE DEVELOPED FOR TWO CLASSES OF AIRCRAFT TURBINE ENGINES. CORRELATION AND MULTIPLE REGRESSION METHODS WERE USED IN THE ANALYSIS OF EMISSION MEASUREMENTS RECORDED FROM TWO TURBINE ENGINES, OPERATED UNDER NATURALLY OCCURRING ENVIRONMENTAL CONDITIONS, STARTING IN THE WINTER AND CONTINUING THROUGH THE SUMMER SEASON. CORRECTION FACTORS WERE ESTABLISHED FOR THE EMISSION INDEX (EI) AND POWER INDEX (PI) FOR CARBON MONOXIDE (CO), TOTAL HYDROCARBONS (THC), AND NITROGEN OXIDES (NOX) FOR EACH OF FIVE ENGINE POWER CONDITIONS OF IDLE, APPROACH, CRUISE, MAXIMUM CONTINUOUS, AND TAKEOFF. AMBIENT TEMPERATURE PRODUCED THE DOMINANT EFFECT ON ALL GASEOUS EMISSIONS. EI AND PI FOR THC REQUIRED THE GREATEST MAGNITUDE OF AMBIENT TEMPERATURE CORRECTION FACTORS. HUMIDITY HAD A SIGNIFICANT SECONDARY EFFECT ON THE GENERATION OF NOX). THE EFFECTS OF BAROMETRIC PRESSURE WERE WITHIN EXPERIMENTAL ERROR FOR THE MINIMAL RANGE OF PRESSURES ENCOUNTERED. THE CORRECTION COEFFICIENTS ESTABLISHED FROM A TF30-P1 ENGINE DATA BASE WERE DETERMINED TO BE APPLICABLE FOR CORRECTION OF JT8D ENGINE EMISSIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A032 657 6/20 6/6 13/2 2/4
CALIFORNIA UNIV RIVERSIDE STATEWIDE AIR POLLUTION RESEARCH CENTER

DETERMINATION OF EFFECTS OF DESIGNATED POLLUTANTS ON PLANT SPECIES. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 1, 1 SEP 75-30 JUN 76,
OCT 76 58P GRANETT,A. L. ;TAYLOR,O. C. ;
CONTRACT: F33615-76-C-5005
PROJ: AF-6302
TASK: 630204
MONITOR: AMRL TR-76-66

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON ENVIRONMENTAL TOXICOLOGY.

DESCRIPTORS: *TOXICITY, *PLANTS(BOTANY), *EXHAUST GASES, HYDROGEN CHLORIDE, AIR POLLUTION, TOXICOLOGY, EXPERIMENTAL DATA, HYDROGEN FLUORIDE, GREENHOUSES, TOXIC TOLERANCES, ALUMINUM OXIDES, PLANT GROWTH (U)
IDENTIFIERS: MISSILES, *AIR POLLUTION EFFECTS(PLANTS), *PHYTOTOXINS, PLANT DAMAGE, EXHAUST EMISSIONS, MAXIMUM PERMISSIBLE EXPOSURE LEVEL, PLANT NUTRITION (U)

THE PHYTOTOXIC RESPONSES OF SELECTED PLANTS TO MISSILE EXHAUST PRODUCTS WERE STUDIED. THE PLANTS INCLUDED BUT WERE NOT LIMITED TO ORNAMENTAL, VEGETABLE, AND FIELD CROPS FOUND IN THE VICINITY OF VANDENBERG AIR FORCE BASE AND WERE GROWN IN GREENHOUSES EQUIPPED WITH EVAPORATIVE COOLERS WITH ACTIVATED CHARCOAL AIR FILTERS. THE MISSILE PRODUCTS INVESTIGATED WERE HYDROGEN CHLORIDE AND HYDROGEN FLUORIDE GASES AND ALUMINUM OXIDE AEROSOLS, ALONE AND IN VARIOUS COMBINATIONS OF TOXICANTS. THE GASES WERE GENERATED BY THE VOLATILIZATION OF ACID LIQUIDS INTO A HOT AIR STREAM AND THE AEROSOLS WERE GENERATED USING NITROGEN GAS TO CARRY THE PARTICLES THROUGH A CYLINDER HAVING A RESERVOIR OF PARTICLES. THE GASES WERE MONITORED IN THE EXPOSURE CHAMBERS BY TRAPPING AND TITRATING KNOWN AIR SAMPLES. MOST STUDIES CONCENTRATED ON HCL GAS ALONE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A033 121 21/5

NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC CITY N J

ANALYTICAL STUDY OF MIXED-FLOW JT8D EXHAUST EMISSIONS MEASUREMENTS FOR FIXED-PROBE REQUIREMENTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JAN-JUN 73,
OCT 76 43P SLUSHER, GERALD R. ;
REPT. NO. FAA-NA-75-12
MONITOR: FAA-RD 76-140

UNCLASSIFIED REPORT

DESCRIPTORS: *TURBOFAN ENGINES, *EXHAUST PLUMES, *EXHAUST GASES, SAMPLING (U)
IDENTIFIERS: JT-8D ENGINES (U)

A METHOD IS OUTLINED TO OPTIMIZE THE SHAPE, SIZE, AND LOCATION OF FIXED PROBE FOR ACQUIRING REPRESENTATIVE EMISSION SAMPLES FROM THE EXHAUST OF A MIXED-FLOW JT8D-11 TURBOFAN ENGINE. FAMILIES OF GEOMETRIC SHAPES AND MUTUALLY EXCLUSIVE PROBE CONFIGURATIONS ARE OVERLAID UPON A 177-POINT TRAVERSE GRID. A SIGNIFICANCE RATIO IS CALCULATED AND USED TO RANK RESULTS. REPRESENTATIVE AND NONREPRESENTATIVE AREAS OF THE EXHAUST PLUME ARE DEFINED. PROBE CONFIGURATIONS ARE OVERLAID UPON THE TRAVERSE GRID AND RANKED TO OBTAIN A REPRESENTATIVE CONFIGURATION. AN AREA OF THE JT8D EXHAUST PLUME SUITABLE FOR ACQUIRING REPRESENTATIVE EMISSION SAMPLES WAS FOUND WHICH REDUCES THE OVERALL 177 SAMPLE POINTS TO 20 SAMPLE POINTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A034 550 21/8.2 13/2
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

LABORATORY AND FIELD EVALUATION OF HYDROGEN CHLORIDE MEASUREMENT INSTRUMENTATION. (U)

DESCRIPTIVE NOTE: SUMMARY REPT. JUN 74-APR 76, DEC 76 35P MILLER,RICHARD L. ;LIGDAY, ROBERT C. ;
REPT. NO. SAM-TR-76-40
PROJ: 7164
TASK: 16

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *HYDROGEN CHLORIDE, *MONITORS, *ROCKET EXHAUST, CHEMILUMINESCENCE, COULOMETERS, AIRBORNE, GROUND SUPPORT EQUIPMENT, SOLID PROPELLANT ROCKET ENGINES, BOOSTER ROCKET ENGINES, LAUNCH VEHICLES, EXHAUST GASES, MONITORING (U)
IDENTIFIERS: TITAN 3, WUSAM71641606, PE62202F (U)

THIS REPORT DESCRIBES THE OPERATING CHARACTERISTICS OF THE MICROCOULOMETRIC AND CHEMILUMINESCENT HCL ANALYZERS AND SUMMARIZES RESULTS FROM THE SEVERAL LABORATORY AND FIELD EVALUATION STUDIES. THE FIELD TEST PROGRAM HAS PROVIDED A CLEAR INDICATION OF INSTRUMENTATION PREFERENCE FOR SPECIFIC APPLICATIONS, BUT ONLY PRELIMINARY INSIGHT INTO THE BEHAVIOR OF THE EXHAUST CLOUD FOLLOWING SOLID BOOSTER ROCKET LAUNCHES. THE DETECTION CONCEPT AND FAST RESPONSE CHARACTERISTICS OF THE CHEMILUMINESCENT ANALYZER MAKE IT CLEARLY SUPERIOR FOR THE AIRBORNE MONITORING APPLICATION. THE COULOMETER BY CONTRAST HAS PROVEN ITSELF AS A VERSATILE LABORATORY TOOL AND A USEFUL FIELD INSTRUMENT FOR HCL DETECTION IN GROUND MONITORING APPLICATIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A034 726 13/2 21/5
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

EVALUATION OF PROBE SAMPLING VERSUS OPTICAL IN SITU MEASUREMENTS OF NITRIC OXIDE CONCENTRATIONS IN A JET ENGINE COMBUSTOR EXHAUST. (U)

DESCRIPTIVE NOTE: FINAL REPT. 2 JUL 74-16 FEB 75, JAN 77 45P FEW,J. D. ;BRYSON,R. J. ;MCGREGOR,W. K. ;
REPT. NO. AEDC-TR-76-180
PROJ: ARO-R32-P55A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO, INC., TULLAHOMA, TENN. REPT. NO. ARO-ETF-TR-76-76.

DESCRIPTORS: *NITROGEN OXIDES, *EXHAUST GASES, *PROBES, OPTICAL EQUIPMENT, SAMPLERS, CONCENTRATION(COMPOSITION), COMPARISON, JET ENGINES, AIR POLLUTION, CHEMILUMINESCENCE, ABSORPTION SPECTRA, PERFORMANCE TESTS, BAND SPECTRA, GAS ANALYSIS (U)
IDENTIFIERS: *AIR POLLUTION DETECTION, DESIGN CRITERIA (U)

MEASUREMENTS OF NITRIC OXIDE (NO) CONCENTRATIONS WERE MADE AT THE EXHAUST OF A JET ENGINE COMBUSTOR BY CONVENTIONAL GAS-SAMPLING PROBE AND CHEMILUMINESCENT ANALYZER METHODS, BY OPTICAL RESONANCE ABSORPTION THROUGH ABSORPTION CELLS LOCATED WITHIN THE GAS SAMPLE TRANSFER LINE, AND BY OPTICAL RESONANCE ABSORPTION DIRECTLY THROUGH THE COMBUSTOR EXHAUST. THE COMBUSTOR WAS EXHAUSTED TO ATMOSPHERIC PRESSURE AND WAS OPERATED AT AN INLET TEMPERATURE NEAR 600F, A TOTAL PRESSURE OF ABOUT 3 TO 4 ATM, AND AT FUEL-TO-AIR RATIOS (F/A) FROM 0.01 TO 0.05. A TUBULAR INLET, LIQUID-COOLED, STAINLESS STEEL SAMPLING PROBE WAS INSERTED INTO THE GAS STREAM AT THE COMBUSTOR EXIT. THE OPTICAL TECHNIQUE USED WAS THE RESONANCE ABSORPTION METHOD FOR THE (0,0) GAMMA-BAND OF NO AT WAVELENGTHS RANGING FROM 2,200 TO 2,270 A. THE RESULTS SHOWED THAT WITHIN THE SAMPLING LINE BOTH THE CHEMILUMINESCENT GAS ANALYZER AND THE OPTICAL ABSORPTION METHOD GAVE NO CONCENTRATIONS THAT AGREED WITHIN ABOUT 20 PERCENT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

D-A035 210 13/2 14/2 21/7
HARRY DIAMOND LABS ADELPHI MD

DIESEL SMOKE METERS FOR ARMY USE. (U)

ESCRIPTIVE NOTE: TECHNICAL MEMO.,
NOV 76 78P MCGUIRE,DENNIS W. ;
EPT. NO. HDL-TM-76-17

UNCLASSIFIED REPORT

ESCRIPTORS: *SMOKE, *MEASURING INSTRUMENTS,
*DIESEL ENGINES, *EXHAUST GASES, SMOKE ABATEMENT,
AIR POLLUTION, VEHICLE EQUIPMENT, MAINTENANCE,
MILITARY VEHICLES, POLLUTANTS, AIR QUALITY,
QUALITY CONTROL, INSPECTION, PHOTODETECTORS,
DETECTION, EMISSION (U)
DENTIFIERS: CELESCO PORTABLE SMOKE METERS (U)

A STUDY WAS PERFORMED TO DETERMINE THE SUITABILITY OF EXISTING DIESEL SMOKE MEASURING EQUIPMENT AND TECHNIQUES FOR ARMY USE IN A PROGRAM OF DIESEL SMOKE ABATEMENT. MOST COMMERCIAL EQUIPMENT AND VIRTUALLY ALL KNOWN TECHNIQUES WERE CONSIDERED IN VIEW OF POSSIBLE ENFORCEMENT, MAINTENANCE, OR TRAINING APPLICATIONS. ATTEMPTS WERE MADE ALSO TO CRITICALLY EVALUATE THE PARTICULAR NATURE OF THE ARMY SMOKE PROBLEM SO THAT RECOMMENDATIONS COULD BE PRESENTED IN A REALISTIC PERSPECTIVE. THIS REPORT GIVES A DETAILED SUMMARY OF THE RESULTS OF THIS STUDY. SMOKE MEASURING TECHNIQUES AND AVAILABLE COMMERCIAL EQUIPMENT ARE REVIEWED, AND TECHNICAL CRITICISMS ARE GIVEN. PREVIOUS OVERALL STUDIES OF THE TECHNICAL ASPECTS OF SMOKE MEASUREMENT ALSO ARE REVIEWED AND COMPARED. EXISTING SMOKE ABATEMENT PROGRAMS, INCLUDING FEDERAL AND STATE, AND THEIR ASSOCIATED INSPECTION PROCEDURES ARE EXAMINED, AND ATTEMPTS AT THEIR TECHNICAL AND PRACTICAL EVALUATION ARE PRESENTED. THE ARMY SMOKE PROBLEM IS EXAMINED BY REVIEWING THE AVAILABLE TECHNICAL STUDIES OF THE PROBLEM AND BY CONSIDERING INFORMATION OBTAINED FROM VARIOUS KNOWLEDGEABLE INDIVIDUALS THROUGH INTERVIEWS. SEVERAL NOVEL TECHNIQUES FOR THE MEASUREMENT OF DIESEL SMOKE ARE SUGGESTED FOR CONSIDERATION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A036 393 21/5 13/2
AIR FORCE CIVIL ENGINEERING CENTER TYNDALL AFB FLA

THE EFFECT OF NAVY AND AIR FORCE AIRCRAFT ENGINE TEST FACILITIES ON AMBIENT AIR QUALITY. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUN 75-31 JUL 76,
OCT 76 24P GREMS,BRADFORD C. , III;
NAUGLE,DENNIS F. ;
REPT. NO. AFCEC-TR-76-36

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES REPT. NO. AFCEC-TM-76-7.

DESCRIPTORS: *JET ENGINES, *TEST FACILITIES, *AIR QUALITY, AIR POLLUTION, POLLUTION ABATEMENT, NITROGEN OXIDES, HYDROCARBONS, CARBON MONOXIDE, PARTICULATES, COMPUTERIZED SIMULATION, MATHEMATICAL PREDICTION, ENVIRONMENTAL IMPACT STATEMENTS (U)
IDENTIFIERS: SULFUR DIOXIDE (U)

AN INVESTIGATION OF THE AIR QUALITY INPACT OF DOD TURBINE ENGINE TEST FACILITIES WAS PERFORMED. EMISSIONS AND POLLUTANT DISPERSION FROM TEST CELLS AND AIRCRAFT AT SIX DOD INSTALLATIONS WERE PREDICTED USING A SOPHISTICATED COMPUTER MODEL. PREDICTED POLLUTANT CONCENTRATIONS ARE COMPARED TO AMBIENT AIR QUALITY STANDARDS AND MEASURED AMBIENT VALUES FOR HYDROCARBONS, OXIDES OF NITROGEN, AND PARTICULATES. JET ENGINE TEST CELLS HAVE NO SIGNIFICANT IMPACT ON AIR QUALITY FOR ANY POLLUTANT AT ANY LOCATION STUDIED. TEST CELL POLLUTANT CONCENTRATIONS ARE CONSIDERABLE LESS THAN THE LEVELS GENERATED BY AIRCRAFT OPERATIONS AND WELL BELOW MEASURED AMBIENT AIR QUALITY LEVELS IN THE AREAS STUDIED. AMBIENT CARBON MONOXIDE AND SULFUR DIOXIDE LEVELS RESULTING FROM TEST CELL EMISSIONS ARE INSIGNIFICANT. CONTROL OF ANY POLLUTANTS GENERATED BY TEST CELLS WOULD NOT MEASURABLY IMPROVE AMBIENT AIR QUALITY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A036 397 9/2
NEW MEXICO UNIV ALBUQUERQUE ERIC H WANG CIVIL ENGINEERING RESEARCH FACILITY

DEVELOPMENT OF CONTOURING CAPABILITY FOR DISPLAYING RESULTS OF AIR QUALITY ASSESSMENT MODEL. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUL 75-1 JUN 76,
OCT 76 40P DUNPHY,EDWARD P. ;
REPT. NO. CERF-EE-8
CONTRACT: F29601-76-C-0015
PROJ: 2103
TASK: 5A
MONITOR: AFCEC TR-76-25

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR QUALITY, *DATA DISPLAYS, CONTOURS, ASSESSMENT, MODELS, COMPUTER GRAPHICS, ALGORITHMS, AIR POLLUTION, AIRCRAFT EXHAUST, EXHAUST PLUMES, AIRPORTS (U)
IDENTIFIERS: WUAFCEC21035A23, PE63723F (U)

A COMPUTER CONTOURING PLOT PACKAGE HAS BEEN DEVELOPED TO DISPLAY THE RESULTS OF THE AIR QUALITY ASSESSMENT MODEL (AQAM). THIS PROGRAM ACCEPTS INPUT DATA CARDS OR AN INPUT DATA TAPE GENERATED ON AN AQAM RUN. UP TO 2^0 UNEQUAL CONTOUR LEVELS WITH TENSION PARAMETERS AND DASHLINE PATTERNS MAY BE SPECIFIED IN EACH CONTOUR PLOT. THE CONTOURING PACKAGE IS WRITTEN FOR THE CDC 6600 COMPUTER SYSTEM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A036 504 13/2 4/1
WYOMING UNIV LARAMIE DEPT OF PHYSICS AND ASTRONOMY

ASSESSMENT OF ATMOSPHERIC CONDENSATION NUCLEI ASSOCIATED WITH JET AIRCRAFT TRAFFIC. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. MAY 76-APR 77,
APR 77 12P HOFMANN,D. J. ;ROSEN,J.
M. ;
REPT. NO. CN-7
CONTRACT: N00014-76-C-0170
PROJ: NR-211-151

UNCLASSIFIED REPORT

DESCRIPTORS: *AEROSOLS, *AIR POLLUTION, *CONDENSATION NUCLEI, *JET ENGINE EXHAUST, PARTICLE SIZE, STRATOSPHERE, TROPOSPHERE, SULFURIC ACID, SULFATES, EXHAUST GASES, BALLOON EQUIPMENT, MONITORING, REMOTE DETECTORS, MEASUREMENT, ATMOSPHERIC MOTION (U)
IDENTIFIERS: PARTICULATES, AIR POLLUTION DETECTION (U)

MEASUREMENT OF CONDENSATION NUCLEI (CN) IN THE SIZE RANGE R > OR = 0.01 MICROMETERS BY BALLOON-BORNE DETECTORS FROM A NUMBER OF STATIONS SUGGESTS THE FOLLOWING: (A) CN PROFILES (CONCENTRATION VS ALTITUDE) TO 30KM ARE SOMEWHAT UNIFORM GLOBALLY WITH TYPICALLY HIGH (APPROXIMATELY 1000/CC) CONCENTRATIONS IN THE TROPOSPHERE AND TYPICALLY LOW (APPROXIMATELY 10/CC) CONCENTRATIONS IN THE STRATOSPHERE. (B) THE TROPOSHERE APPEARS TO SERVE AS A CN SOURCE FOR THE STRATOSPHERE. (C) CN OCCURING IN TROPOSPHERIC LAYERS ARE PARTIALLY VOLATILE AT 150C. (D) A CN LAYER OBSERVED IN THE STRATOSPHERE AT 22KM WAS APPARENTLY DUE TO THE JET ENGINE EMISSIONS OF A HIGH FLYING AIRCRAFT. IN ADDITION, LARGER PARTICLES (R > OR = 0.15 MICROMETERS) IN THE STRATOSPHERIC SULFATE LAYER HAVE CONTINUED TO DECAY UNIFORMLY FOLLOWING AN INJECTION APPARENTLY DUE TO A VOLCANIC ERUPTION IN OCTOBER 1974. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A037 694 21/5 13/2
AIR FORCE CIVIL ENGINEERING CENTER TYNDALL AFB FLA

PREDICTION OF TEST CELL VISIBLE EMISSIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN-NOV 76,
DEC 76 41P FINCH,SAMUEL P. , III;EYL,
ARLAND W. , JR;
REPT. NO. AFCEC-TR-76-47
PROJ: 2103
TASK: 7A

UNCLASSIFIED REPORT

DESCRIPTORS: *JET ENGINE EXHAUST, *AIR POLLUTION, EXHAUST PLUMES, ENVIRONMENTAL PROTECTION, PARTICULATES, SOOT, AUTOMOBILE EXHAUST, PREDICTIONS, SMOKE (U)
IDENTIFIERS: WUAFCEC21037A29, PE63723F (U)

A THEORETICAL CORRELATION BETWEEN JET ENGINE TEST CELL PLUME OPACITY AND SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) ENGINE SMOKE NUMBER (SN) WAS DEVELOPED. INTERMEDIATE RESULTS PROVIDE SOOT LOADING AT THE EXHAUST PLANE OF THE ENGINE, ENGINE EXHAUST FLOW RATES AND TEST CELL TOTAL AIR FLOW RATE. THE SPECIFIC PARTICLE EXTINCTION COEFFICIENT WHICH CORRELATES LIGHT SCATTERING PROPERTIES WITH SOOT LOADING IS THE MOST DIFFICULT PARAMETER TO DEFINE. A VALUE PREDICTED FROM MIE THEORY IS USED FOR CORRELATIONS CLOSE TO THE EXHAUST PLANE OF THE ENGINE. AT THE EXIT PLANE OF THE EXHAUST STACK AGGLOMERATION AND SCOURING CHANGE THE PARTICLE SIZE DISTRIBUTION AND INDIVIDUAL PARTICLE DENSITY SO THAT THEORETICAL PREDICTION IS DIFFICULT. THE VALUE FOR SPECIFIC PARTICLE EXTINCTION COEFFICIENT AT THE EXHAUST STACK WAS CHOSEN BASED ON WHAT LITTLE EMPIRICAL DATA WAS AVAILABLE. WHEN ADDITIONAL DATA BECOMES AVAILABLE, IT SHOULD BE POSSIBLE TO DEFINE THIS PARAMETER MORE PRECISELY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-B002 928 17/5 21/2
AIR FORCE ARMAMENT LAB EGLIN AFB FLA

OPERATION OF AN INFRARED THERMAL SCANNER FOR PLUME MEASUREMENTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUL 73-JUN 74, DEC 74 35P MARTIN, CHARLES W. ;ASKEW, RAYMOND F. ;EBEOGLU, DAVUT B. ;
REPT. NO. AFATL-TR-74-204
PROJ: AF-1921
TASK: 192103

UNCLASSIFIED REPORT

DESCRIPTORS: (*INFRARED SIGNATURES, PLUMES), (*EXHAUST GASES, EMISSIVITY), (*THERMAL TARGETS, CALIBRATION), (*AERIAL TARGETS, TARGET SIGNATURES), INFRARED SCANNING, INFRARED IMAGES, SIGNAL PROCESSING, PHOTOVOLTAIC EFFECT (U)
IDENTIFIERS: MIDDLE INFRARED REGION, INFRARED CAMERAS, PHOTOVOLTAIC DETECTORS (U)

A DATA PROCESSING AND SYSTEM CALIBRATION EFFORT HAS BEEN CONDUCTED TO PROVIDE SPATIALLY ACCURATE QUANTITATIVE RADIANT INTENSITY DATA ON EXTENDED INFRARED SOURCES. THIS CAPABILITY HAS BEEN DEVELOPED TO PERMIT THE EXPERIMENTAL STUDY OF THE INFRARED EXHAUST PLUMES OF PROPULSION SYSTEMS. THE OBJECTIVE OF THIS STUDY IS TO DEVELOP REALISTIC INFRARED SIGNATURE SIMULATION FOR AERIAL TARGETS. THIS REPORT DESCRIBES HOW NUMERICALLY ACCURATE INFRARED IMAGERY MAY BE OBTAINED IN THE 4 TO 5.5 MICRON BAND WITH A BOFORS INFRARED IMAGING CAMERA COUPLED TO AN ANALOG/DIGITAL DATA ACQUISITION SYSTEM. THE GENERAL PROCEDURES ESTABLISHED TO CALIBRATE THE INSTRUMENT AND THE DATA PROCESSING NOW AVAILABLE TO THE USER ARE DESCRIBED IN DETAIL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-B004 783 15/2 13/2 17/5
NAVAL SURFACE WEAPONS CENTER DAHLGREN LAB VA

THE DETECTION AND TRACKING OF STACK EFFLUENT WITH A FORWARD LOOKING INFRARED IMAGING SENSOR. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 75 45P TACZAK,WILLIAM J. , JR.;
HORMAN,STEPHEN R. ;HERNDON,STUART B. ;
DOERFLEIN,ROBERT D. ;
REPT. NO. NSWC/DL-TR-3313

UNCLASSIFIED REPORT

DESCRIPTORS: (*INFRARED DETECTION, *AIR POLLUTION), (*GB AGENT, EFFLUENTS), (*FORWARD LOOKING INFRARED SYSTEMS, *INFRARED IMAGES), (*INFRARED SPECTROMETERS, GAS DETECTORS), SMOKE STACKS, INFRARED TRACKING, SULFUR COMPOUNDS, FLUORIDES, WATER VAPOR, GASES, MOLECULAR WEIGHT, PLUMES, TRIANGULATION, POSITION FINDING, DEMILITARIZATION, DESTRUCTION (U)
IDENTIFIERS: AN/AAS-28, SULFUR HEXAFLUORIDES (U)

EXPERIMENTAL RESULTS OF USING A FORWARD LOOKING INFRARED (FLIR) THERMAL IMAGING SYSTEM TO MONITOR THE SPRAY DRYER STACK EFFLUENT AT ROCKY MOUNTAIN ARSENAL, COLORADO, ARE PRESENTED. THE EFFLUENT WAS EMITTED IN THE DEMILITARIZATION PROCESS OF GB NERVE GAS. SINCE THE EFFLUENT WAS MOSTLY WATER VAPOR WITH VERY SMALL QUANTITIES OF RESIDUE GB, A STRONG INFRARED ABSORBER THAT APPROXIMATED THE MOLECULAR WEIGHT OF GB, SULFUR HEXAFLUORIDE (SF6), WAS ADDED TO THE STACK TO AID TRACKING. WITHOUT THE SF6, THE PLUME EXTENT WAS SEEN AS READILY BY VISUAL MEANS AS WITH A FLIR. WITH SF6 ADDED TO THE STACK, THE PLUME WAS TRACKED FROM RANGES OF HUNDREDS OF YARDS TO SEVERAL MILES, DEPENDING UPON THE METEOROLOGICAL AND BACKGROUND CONDITIONS. FINALLY, TWO FLIR UNITS, IN CONJUNCTION WITH A MOBILE AIR SAMPLER UNIT OF THE ARMY ENVIRONMENTAL HYGIENE AGENCY, USED TRIANGULATION TO SUCCESSFULLY LOCATE THE AREA WHERE THE SPRAY DRYER PLUME REACHED GROUND LEVEL UNDER SEVERAL METEOROLOGICAL CONDITIONS. FURTHERMORE, IT WAS CONCLUDED THAT A THERMAL IMAGING DEVICE, COUPLED WITH A HIGH SPECTRAL RESOLUTION SPECTROMETER, WOULD BE USEFUL IN DETECTING AIR POLLUTION DURING DAY OR NIGHT OPERATIONS. (AUTHOR) (U)

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AGARD-CP-125
ATMOSPHERIC POLLUTION BY AIRCRAFT ENGINES.
AD- 769 278

•ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT PARIS (FRANCE)

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AGARD-AR-40
ATMOSPHERIC POLLUTION BY AIRCRAFT ENGINES AND FUELS--A SURVEY.
AD- 739 777

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AGARD-AR-55
THE FLUID DYNAMICS ASPECTS OF AIR POLLUTION RELATED TO AIRCRAFT OPERATIONS.
AD- 779 150

•AEROJET-GENERAL CORP AZUSA CALIF

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REPT. NO. 2552
TOXIC HAZARDS EVALUATION OF TITAN II TEST FIRINGS: METHODS AND RESULTS OF LABORATORY AND FIELD INVESTIGATIONS.
(AMRL-TDR63 52)
AD- 412 442

•AERONUTRONIC FORD CORP NEWPORT BEACH CALIF AERONUTRONIC DIV

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MONITORING NO AND CO IN AIRCRAFT JET EXHAUST BY A GAS-FILTER CORRELATION TECHNIQUE.
(AFAPL-TR-75-101)
AD-A022 353

•AEROSPACE CORP EL SEGUNDO CALIF LABS DIV

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(SSD-TR-66-190)

•AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB OHIO

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AMRL-TR-68-85
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AD- 686 459

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AMRL-TR-69-116
STUDIES ON ENVIRONMENTAL POLLUTION BY MISSILE PROPELLANTS.
AD- 704 126

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AMRL-TR-69-130-PAPER-19
SOURCES AND REMOVAL OF CARBON MONOXIDE IN HYPERBARIC ATMOSPHERES.
AD- 710 456

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AMRL-TR-70-102
PROCEEDINGS OF THE ANNUAL CONFERENCE ON ENVIRONMENTAL TOXICOLOGY (1ST) HELD AT FAIRBORN, OHIO, ON 9-11 SEPTEMBER 1970.
AD- 727 022

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AMRL-TR-71-90
EXPOSURE OF MARIGOLD (TAGETES) TO GASEOUS HYDROGEN CHLORIDE.
AD- 732 195

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AMRL-TR-71-120
PROCEEDINGS OF THE ANNUAL CONFERENCE ON ENVIRONMENTAL TOXICOLOGY (2ND) HELD AT FAIRBORN, OHIO ON 31 AUGUST, 1 AND 2 SEPTEMBER 1971.
AD- 746 660

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AMRL-TR-71-120-PAPER-17
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AMRL-TR-72-62
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AMRL-TR-72-130
PROCEEDINGS OF THE ANNUAL CONFERENCE ON ENVIRONMENTAL TOXICOLOGY (3RD) HELD IN FAIRBORN, OHIO, ON 25-27 OCTOBER 1972.
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AMRL-TR-75-57
TOXIC HAZARDS RESEARCH UNIT ANNUAL TECHNICAL REPORT: 1975.
AD-A019 456

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ENVIRONMENTAL QUALITY RESEARCH. THE PHYTOTOXICITY OF MISSILE EXHAUST PRODUCTS: SHORT TERM EXPOSURES OF PLANTS TO HCL, HF AND AL(2)O3.
AD-A026 837

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AMRL-TR-76-57
TOXIC HAZARDS RESEARCH UNIT ANNUAL TECHNICAL REPORT: 1976.
AD-A031 860

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AMRL-TR-76-66
DETERMINATION OF EFFECTS OF DESIGNATED POLLUTANTS ON PLANT SPECIES.
AD-A032 657

•AEROSPACE RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

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ARL-68-0024
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AD- 667 557

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ARL-TR-74-0015

AN ASSESSMENT OF INSTRUMENTATION AND MONITORING NEEDS FOR SIGNIFICANT AIR POLLUTANTS EMITTED BY AIR FORCE OPERATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH ON ANALYSIS OF POLLUTANTS.
AD- 778 938

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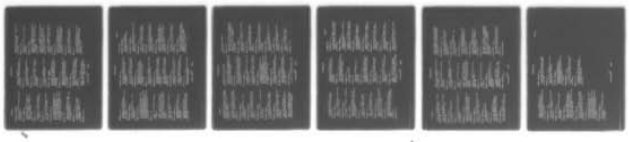

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