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Comment

Sounding Brass: Military Aircraft Noise Pollution

Recent efforts to abate noise have generally overlooked or excluded the United States military as a major source of pollution. Military aircraft operations have become a significant threat to the health of individuals and their environment. Judicial remedies of inverse condemnation, nuisance, and negligence, often brought under the Federal Torts Claim Act or the Military Claims Act, are inadequate in dealing with the present scope and level of noise pollution. The severe repercussions of noise and the contributing role that the military plays mandate a change in legislative policy and judicial interpretations. This paper examines the problem posed by military aircraft noise, urges the necessity of change, offers underlying reasons to support this change, and suggests directions that future policy and decisions should take.

And on the seventh day the priests shall take the seven trumpets...you shall go about the city seven times, and the priest shall sound the trumpets...So all the people making a shout, and the trumpets sounding...the walls forthwith fell down...1

Thus was recorded one of man's first encounters with noise pollution. If the Hebrew priests could have substituted one United States Navy "Phantom" jet for their trumpets, however, the walls of Jerico would probably have collapsed without Divine intervention. Implausible as this seems the United States National Park Service reports otherwise after having recently witnessed two twentieth-century Jericos. In 1966, a prehistoric cliff dwelling which has housed Pueblo Indians for more than a thousand years in Arizona's Canyon de Chelly National Monument was destroyed when a sonic boom from military aircraft caused an overhanging precipice to cave in on the ancient city.2 Similarly, in 1968, 66,000 tons of rock were triggered loose by a military caused sonic boom over Mesa Verde National Park.3 These incidents, by no means isolated events,4 are indicative of what has been

2. 113 CONG. REC. 800 (1967).
4. See, e.g., note 175 infra detailing incidents of military abuse of the environment of Yosemite National Park.
occurring with ever-increasing frequency in America since the dawn of the jet age.

The deleterious effects of aircraft noise on man's environment are finally being acknowledged through numerous proposals for changes in existing legislation and technology. Despite efforts to alleviate at least the most blatant sources and repercussions of noise pollution from civil aviation, one of the major noise polluters has escaped public scrutiny and control. The United States military, owner of twenty percent of American aircraft, is tacitly or explicitly exempted from noise abatement regulations at both the federal and local level. This is often justified by the convenient excuse of combat readiness, even when not warranted by the circumstances. Operating from this privileged position the military is disregarding a major environmental issue which daily affects the lives and livelihoods of millions of American citizens.

Aircraft noise has become a problem of serious proportions to many people in many locales. It represents an intrusion on the pattern of their lives and a disruption of the environment which cannot go unattended. It can, and must, be alleviated. Aircraft noise is a burgeoning national problem, which can only become worse if action is not taken.

With that statement the Senate Committee on Commerce succinctly concluded why the noise and sonic boom abatement section of the Federal Aviation Act was enacted. Under this law the FAA is charged with a mandatory duty to affirmatively implement a noise reduction program for aircraft. As stated by the House Committee on Interstate and Foreign Commerce:

The introduced bill merely authorized the establishment of standards, rules, and regulations and their application in the certification process. The bill reported by the committee requires their establishment and application. The basic purpose of this legislation is the control

5. See Appendix infra, for a fuller discussion of the adverse effects of aircraft noise on man and his environment.
9. 49 U.S.C. §§ 1431 et seq. (1970). The apparent purpose of the amendment was to authorize and require the federal government to establish and apply noise reduction standards to the issuance of certificates by the FAA and to prescribe and amend such rules and regulations, as necessary, to provide for the control and abatement of aircraft noise.
and abatement of aircraft noise and sonic booms. The committee would emphasize that this legislation should not be construed as permissive. Its intent is the reduction of unnecessary aircraft noise and sonic boom. All such noise might well be deemed unwanted. The committee believes that, as a matter of public policy, the goal must be the lowest possible level of disturbance consonant with safety and the public interest. The committee would not have anyone construe this legislation as a license to permit noise or sonic boom.¹⁰

Despite this seemingly unequivocal congressional policy and the Act's purpose in "combatting aircraft noise pollution by striking directly at its source, the design and operation of the aircraft causing noise,"¹¹ Congress was nonetheless unwilling to include military aircraft within the scope of the statute. This intentional omission prevailed despite testimony that "military jets are the noisiest of all aircraft and they are substantial contributors to the aircraft noise problem."¹²

Since military aircraft, unlike their civilian counterparts, have neither muffling devices nor realistic regulations governing noise emissions, the airport community is subjected to more than the decibels attributed to a jet at takeoff.¹³ In fact it is not unfair to conclude that in many instances, as when a jet utilizes afterburners to aid in takeoff or when a transport has a heavy load, it exceeds its usual high decibel level. The consequences for the community are tragic.

The degree of damage to the airport community is usually proportional to the frequency of use. A jet engine can "cause profound deafness in three minutes, a deafness that is irreversible and permanent

¹⁰. H.R. REP. No. 1463, 90th Cong., 2d Sess., at 5 (1968). During the floor debate, Congressman Roman Pucinski emphasized the obligatory effect of the amendment:

This is just not another study commission. What we are doing here is amending the Aviation Act. We want to make certain that the Secretary of the Department of Transportation has a mandate to do something affirmative, something positive and meaningful about jet noise abatement and sonic boom. It is my opinion that within the structure of this legislation we will be able to do this.

¹¹. 114 CONG. REC. 16,397 (1968). Senator Joseph Tydings made a similar statement during Senate debate:

In summary, the bill provides for the control and abatement of aircraft noise, and marks Congress' first attempt to try to protect America's eardrums. It authorizes and requires the Administrator of the Federal Aviation Administration to establish noise reduction standards for the measurement of aircraft noise and sonic boom, and to apply these standards in the issuance of certificates under Title VI of the Federal Aviation Act.


¹³. See text accompanying notes 138-39 infra.
for lifetime." But the tragedy is often compounded because the people of the community do not become aware of their gradual hearing loss until it is too late. With heavier traffic, the harm to man and his environment is greater and more likely. While noise produced at such airbases is not continuous, the ears, bodies, and minds of the members of the adjacent population are exposed to a potentially damaging situation.

President Nixon recently stated that "the American people have rightly become increasingly annoyed by the growing level of noise. . . . Airplanes . . . and many other sources of noise interrupt sleep, disturb communication, create stress, and can produce deafness and other adverse health effects. The urban environment in particular is being degraded by steadily rising noise levels." Until the problem of military aircraft noise is solved, much of the President's statement will remain true.

This paper focuses upon the problems that military aircraft present to the environment and the remedies presently available to adversely affected individuals. It suggests possible remedial measures.


15. While the exact effects of noise are unclear, it appears that noise that does not cause a temporary hearing loss rarely causes permanent disability. On the other hand, any loss of hearing or pain (ringing in the ears, etc.) experienced soon after a military installation completed maximum flight operations would almost surely indicate initial symptoms of perceptive deafness. 112 Cong. Rec. 18236-38 (1966).

16. See text accompanying notes 143-52 infra; see also statement by W.D. Ward, in Proceedings of the National Conference on Noise as a Public Health Hazard, American Speech and Hearing Association 44-46 (June 1968) [hereinafter cited as Proceedings on Noise]. Ward alleged that our industrial experience revealed that "steady noises above 80 db are capable of producing some changes in auditory threshold, and above 105 db they are sure to produce PTS (permanent threshold shift) in the normal unprotected ear if exposure continues, eight hours a day, for several years." He further asserted that continuous exposure to high-level noise does not strengthen the ear or make it more accustomed to the intrusion: "In fact, Chizuka (1965) recently found just the opposite: his 15-to-18-year-old boys allegedly showed more auditory fatigue after working in noise for several months than when they did at the beginning of employment." Id. at 45.

17. Most military air bases have regulations similar to that of the Alameda Naval Air Base in California which places time restrictions (7:30 a.m. to 8:00 p.m.) on heavy traffic—for example, touch-and-go landings. In regard to how closely, if at all, other military bases conform to this local practice, the author was informed that such determinations were resolved by local jurisdictions rather than by a uniform standard. Interview with Lt. James Perwien, GCA Controller, Alameda Naval Air Station, in Alameda, California, Feb. 11, 1971 (hereinafter cited as Perwien interview). But it must be noted that even twelve hours a day exceeds the minimum decibel safety level for prolonged exposure to constant noise. See text accompanying note 139 infra.

designed to achieve a greater consonance of military operations and environmental necessities, and stresses the role that the judiciary and Congress must play in eliminating military-caused noise pollution. The Appendix to this paper examines, in greater detail, the severity and scope of noise pollution and the military's major contribution to the problem.

I

JUDICIAL REMEDIES

The existing judicial doctrines relevant to aiding the victims of military aircraft noise do not fully indemnify for the injuries actually incurred and too often fail to compensate at all. These doctrines, however, are potential means by which environmentalists may press for reformation of the currently inadequate restrictions on military aircraft. Doctrines of inverse condemnation, nuisance, and tort liability of the federal government provide the present means of compensating the injured victims of excessive noise and hold the key to inducing new governmental action. Expansion of court remedies, through a broadening of current decisional trends, can compensate harm while simultaneously pressuring both Congress and the military to take steps to minimize noise hazards linked with military aircraft.

A. Inverse Condemnation

The theory of inverse condemnation is the legal servant most frequently employed to remedy damage to property rights caused by military aircraft. Stemming from the fifth amendment of the United States Constitution, the theory arises in damage claims resulting from a taking, without formal proceedings, of private property for a public purpose.

The well-spring for inverse condemnation in both military and civilian aircraft damage cases is United States v. Causby, in which the United States Supreme Court awarded damages for injury to a chicken farm caused by noise from overflying military aircraft. The Court pointed out that “[f]lights over private land are not a taking

20. See text accompanying notes 25-41 infra.
21. See text accompanying notes 42-45 infra.
22. See text accompanying notes 46-90 infra.
23. See text accompanying notes 26-84 infra.
24. For a discussion of areas in which new legislation is possibly needed, see Part III infra.
25. “Nor shall private property be taken for public use without just compensation.” U.S. CONST. amend. V.
unless they are so low and so frequent as to be a direct and immediate interference with the enjoyment and use of the land."27 In spite of the considerable damage caused by military aircraft flights, resulting from noise, dust, fumes, and threats to safety, the legal remedy of inverse condemnation is often unattainable.

Damages for inverse condemnation are limited to takings of real property. Consequently, the aggrieved landowner must first show a taking of his property and cannot raise the issue without having a claim to the land in question prior to the governmental interference.28 Moreover, a single destructive act, absent an intent to assert proprietary dominion, is not a compensable taking.29 Having to show this intent places a substantial burden of proof upon the landowner.

Other obstacles are those attributed to the Causby requirement of overflights, as opposed to flights over adjacent property, and the related distinction between “damage consequent” to military air operations and damage from an “actual taking.” The Tenth Circuit, in Batten v. United States,30 stated:

[S]ound waves, shock waves, and smoke pervade property neighboring that on which they have their source, but the disturbance caused thereby is only a neighborhood inconvenience unless they are intentionally directed to some particular property . . . or un-

27. Id. at 266. The Court also noted:
The airplane is part of the modern environment of life, and the inconveniences which it causes are normally not compensable under the Fifth Amendment. The airspace, apart from the immediate reaches above the land, is part of the public domain . . . . Id.

Sixteen years after Causby, in Griggs v. Allegheny County, 369 U.S. 84 (1962), the Supreme Court allowed damages for low-altitude civil aircraft flights over residential property, which rendered it unfit for enjoyment and habitation. Unlike Causby, the airspace at issue was defined by Congress as navigable airspace within the public domain. Yet, the Court found a taking of an air easement, reiterating the Causby doctrine that “the use of land presupposes the use of some of the airspace above it.” Id. at 89.

29. Harris v. United States, 205 F.2d 765, 767 (10th Cir. 1953). Another court has said:
Property is taken in the constitutional sense when inroads are made upon an owner’s use of it to an extent that, as between private parties, a servitude has been acquired by agreement or in the course of time . . . . It is the intent of the party, who, it is claimed has asserted a proprietary interest which is the determining factor. This intent may be manifested by a single deliberate act or it may be inferred by continuous or repeated acts, but a single isolated and unintentional act of the United States resulting in damage or destruction of property is not a taking in the constitutional sense.

Bartholomae Corp. v. United States, 135 F. Supp. 651, 654 (S.D. Cal. 1955). Recovery for sonic booms from military aircraft may not be thwarted by this obstacle, when viewed as a repeated act, often with foreseeable results arising from flights intentionally conducted by the military. See Kline, The SST and Inverse Condemnation, 15 Villanova L. Rev. 887, 902 n.67 (1970).

less they force the abdication of the use of space within the landowner's dominion.\textsuperscript{31}

It is apparent that the Batten court also required a high threshold of damage before it would find a taking. However, Chief Judge Murrah, dissenting in Batten, objected to the majority's requirement of almost total destruction of property in order to constitute a taking and insisted instead that the property interest need be only "substantially diminished."\textsuperscript{32}

Although Batten is still a good authority in federal cases, its criteria for recovery—forced abandonment, intentional destruction, overflight, total destruction of property, and activity more direct than a consequence of operation—deny compensation to deserving landowners. Significantly, many commentators have found fault in the Batten requirements,\textsuperscript{33} and some state courts have embarked upon different courses.\textsuperscript{34}

Perhaps the most hopeful analysis of inverse condemnation was given in Martin v. Port of Seattle\textsuperscript{35} by the Supreme Court of Washington which frankly stated its belief that the Batten dissent more likely "represents the position of the United States Supreme Court."\textsuperscript{36} The court considered the obstacles placed in the way of recovery and

\textsuperscript{31} Id. at 585. Many lower courts have affirmed these distinctions; see, e.g., Ferguson v. City of Keene, 108 N.H. 409, 238 A.2d 1 (1968), where the New Hampshire Supreme Court declared that:

\textquoteleft[A] genuine distinction may reasonably be thought to exist between the nature of the injury suffered by the owner whose land is subjected to direct overflight, and that suffered by his neighbor whose land is not beneath the flight path.\textquoteright

Id. at 412, 238 A.2d at 3.

\textsuperscript{32} 306 F.2d at 587.

\textsuperscript{33} One commentator points out that there is "no justification in the precedents for a requirement that the condemnor actually go upon or over or under the objector surface land." Dunham, Griggs v. Allegheny, 1962 SUPREME COURT REV. 63, 67. He submits to the contrary that "the logic of Causby and its idea of fairness would seem to require a compensation even where the planes do not fly directly over the objector's land." Id. at 88. Other commentators have expressed displeasure over Batten's implications with remarkable uniformity. See Kline, supra note 29, at 909 (calling the overflight requirement myopic); Note, Inverse Condemnation Absent Overflight, 8 NATURAL RES. J. 561 (1968); Note, Jet Noises in Airport Areas: A National Solution Required, 51 MINN. L. REV. 1087 (1967); Reed, Batten v. United States, 9 McGILL L. REV. 246 (1963); Huard, The Roar, The Whine, the Boom and the Law: Some Legal Concerns About the SST, 9 SANTA CLARA LAW. 189 (1969).

\textsuperscript{34} State courts dealing with commercial aircraft and local government taking have been more responsive to the needs of the public. For instance, in Thornburg v. Port of Portland, 233 Or. 178, 376 P.2d 100 (1962), the court noted that "the line on the ground which marks the landowner's right to deflect surface invaders has no particular relevance when the invasion is a noise nuisance." Id. at 198, 376 P.2d at 109.

\textsuperscript{35} 64 Wash. 2d 309, 391 P.2d 540 (1964), cert. denied, 379 U.S. 989 (1965).

\textsuperscript{36} Id. at 317, 391 P.2d at 546.
resolved them in favor of the plaintiff landowners. First, it specifically disallowed the overflight requirement, rejecting the premise that recovery for interference with the use of land should depend upon anything as irrelevant as whether the wing tip of the aircraft passes through some fraction of an inch of the airspace directly above the plaintiff's land.\textsuperscript{37} 

Second, the court properly noted that inverse condemnation is conceptually the same as eminent domain and that the taking occurs by depriving the "owner of land of an essential element in his relationship to that land."\textsuperscript{38} Third, and most significantly, the court discarded substantial injury, as opposed to incidental damage, as a talismanic condition for recovery.\textsuperscript{39} The importance of the \textit{Martin} analysis lies in the fact that it broadens the interpretation of inverse condemnation, an important weapon in the aggrieved landowner's arsenal. While federal governmental immunity from suits has been eroded by acts such as the Military Claims Act,\textsuperscript{40} the landlord still must rely upon inverse condemnation to restore fully his losses from depreciated property.\textsuperscript{41}

\textbf{B. Nuisance and Negligence}

In addition to the theory of inverse condemnation, two other prominent legal theories are available to victimized landowners and others suffering from noise—suits against the federal government based on either nuisance\textsuperscript{42} or negligence.\textsuperscript{43} Pursuant to the exceptions to sovereign immunity, these claims must be brought under the Military

\begin{itemize}
  \item \textsuperscript{37} \textit{Id.} at 316, 391 P.2d at 545.
  \item \textsuperscript{38} \textit{Id.} at 313, 391 P.2d at 544.
  \item \textsuperscript{39} "In inverse condemnation the measure of recovery is injury to market value, and that alone." \textit{Id.} at 319, 391 P.2d at 546. A substantial injury occurs when the market value declines and "when the land of an individual is diminished in value for the public benefit, then justice . . . require[s] that the public pay." \textit{Id.} at 319, 391 P.2d at 547.
  \item \textsuperscript{40} 10 U.S.C. §§ 2731 \textit{et seq.} (1970). For a discussion of the Military Claims Act, see text accompanying notes 46-55 \textit{infra}.
  \item \textsuperscript{41} "Damage within the meaning of the Military Claims Act, is interpreted to mean actual 'physical' damage. Claims for compensation for alleged 'taking' or property resulting from jet operations in the airspace over private real property are not considered cognizable under provisions of the act." Apothaker, \textit{The Air Force, The Navy and Sonic Boom}, 46 A.B.A.J. 987, 987 n.3 (1960).
  \item \textsuperscript{42} Nuisance embraces the broad variety of tortious wrongs that occur upon invasion of an individual's interest in the private use and enjoyment of land. Liability is dependent upon the commission of a tort by the actor—either intentionally, negligently or ultra hazardously—which unreasonably interferes with the comfortable use and enjoyment of property. W. Prosser, \textit{The Law of Torts} 591-602 (4th ed. 1971).
  \item \textsuperscript{43} Negligence actions are narrower in scope than nuisance and entail proof of actual damage, usually caused by a violation of statutory standards. \textit{Id.} at 145-49.
\end{itemize}
MILITARY AIRCRAFT NOISE

Claims Act or the Federal Tort Claims Act. The two causes of action, however, must fit the procrustean requirements of either of these enactments. Each act allows satisfaction to only a narrowly defined group of those persons subjected to military aircraft noise. While the acts lack such requirements of inverse condemnation as intent, substantiality, and actual incursion, and although negligence actions do not require property ownership, the utility of negligence and nuisance as legal theories in suits against the federal government is limited by restrictions in both the Military Claims and Federal Tort Claims Acts.

I. The Military Claims Act

Under the Military Claims Act, an injured landowner may recover a maximum of $15,000 for damage to real property, including damage or loss incident to use and occupancy, damage to and loss of personal property, and personal injury or death. The actionable harm must have been caused by military personnel or employees acting within the scope of their employment and must have been incident to non-combat activities. Primarily, the claimant must prove a causal relationship between the governmental activity and his loss, rather than having to prove actual negligence or intent. Proving causation, however, is quite often a substantial burden because of limited access to the facts of military activity.

The difficulty in proving cause is illustrated by the control the government defendant has over information relating to military activities. Flight paths, maneuvers, and airplane specifications and capacities are data unavailable to most claimants. Showing cumulative damage which occurs over time and is caused by repeated flights—none of which are actionable by themselves—imposes upon the claimant a heavy burden of documenting evidence in order to prove injury. The scrutiny which the military gives to allegations of damage in order to prevent spurious claims is rigorous and compounds the difficulties in

47. Id. According to Air Force and Navy regulations, such activities include those incident to the operation of aircraft. 1958 U.S. CODE, CONG. & AD. NEWS 3785.
48. One commentator has said that

[It is only in the area of noncombat activities that absolute liability is applied. The nature of these maneuvers makes it difficult to get the facts to prove negligence, so it is necessary only to prove that the ... military branch was responsible for what happened in order to be paid.

using the Military Claims Act.49 The military makes these investigations with an eye toward settlement, but only if the claims can be directly connected to the operation of government aircraft.50 The claimant is usually confronted by an investigating team composed of a trained lawyer and an engineer who command a wide variety of research tools, possess expertise in the area, and have access to the resources of airbase and FAA flight information.51 Contentions that a liberalization of the requirements of the Military Claims Act will open government coffers to spurious claims simply ignore the realities of the balance of power among parties to these damage suits.52

Aside from the restrictions arising from the statute of limitations and contributory negligence provisions of the statute,53 a claim will be allowed only if "it is substantiated as prescribed in regulations of

50. Id. at 24.
51. The military realizes that damage, especially structural damage, is often imperceptible and, even if detected, could arguably have been caused by other factors. Therefore, investigators immediately scrutinize areas of damage, obtain statements from claimants and note all possible causative conditions, such as civil aircraft, climatic changes, seismic disturbances, ground vehicular traffic, aging house materials, or house settling. Furthermore, a Navy spokesman maintained that the Navy can generally determine immediately whether the complaint is legitimate. He cited as an example a woman who called in demanding remuneration for a window and vase "broken by a sonic boom involving a Navy jet." A quick check of Navy flight logs revealed that at that particular moment there were purportedly no Navy jets in the air capable of supersonic speed. Perwien interview, supra note 17.
52. Navy spokesmen, for example, claim to know the location of all Navy aircraft at any given time. Perwien interview, supra note 17; see also Naval Operating Instructions § 425, obligating all Navy pilots to conduct their flights in such a manner as to cause a "minimum of annoyance" to the surrounding community; but cf. facts stated in note 175 infra.

There is ample evidence, however, to repudiate this claim. See, e.g., recent vigorous actions by radio station KCBS, San Francisco, relating to numerous citizen complaints protesting extremely low "buzzes" over Yosemite National Park, which drew the following response from Charles Rainey, Public Affairs Officer, Alameda Naval Air Station, on the behalf of Admiral James Ferris, Commander, Fleet Air, Alameda:

Although the Navy has made strenuous efforts to identify aircraft and pilots involved since the matter was brought to our attention, to date we have had insufficient evidence presented to make such identifications and determine whether in fact Naval aircraft were actually involved.
Letter from Admiral Ferris to KCBS radio station, May 18, 1970, on file with Ecology Law Quarterly. For a more complete discussion of KCBS efforts in this matter, see note 175 infra.

If, for example, a pilot breaks the sound barrier at lower than the minimum height, the only recourse for civilians is to make note of the "time and place of such flight, the number of aircraft involved, any markings on the aircraft, the type of aircraft . . . , and any other circumstances of the flights." Letter from Admiral Ferris, supra. The fact that the plane is traveling in excess of 660 m.p.h. or may not be visible, makes detection, and hence compensation, unlikely.
the Secretary concerned." 54 Further, "an unfavorable ruling cannot be appealed to a 'higher court,' but only to the Secretary of Defense through the authority disapproving all or part of the claim." 55 Therefore, courts can do little little to liberalize the requirements of the Act. Consequently it appears that diminished use of property, partial deafness, hypertension, injury to fetuses, and other physical injuries often go without compensation under the Military Claims Act, although the claims are meritorious and within the scope of the Act.

2. The Federal Tort Claims Act

The Federal Tort Claims Act 56 presents a similarly hazardous course to recovery. Although the Act allows a claimant recovery against the United States on tort claims "in the same manner and to the same extent as a private individual under like circumstances," 57 there are two major limitations that reduce this gap in sovereign immunity.

First, the Act requires a showing of negligence or a wrongful act or omission 58 and cannot be used for claims based simply on extra-hazardous activity; second, the Government is not liable for acts involving high level discretion in their performance. Justice Jackson, in his dissenting opinion in Dalehite v. United States, 59 noting these requirements, expressed the fear that the Act and its interpretation by the Supreme Court were merely amending the discredited doctrine that "The King can do no wrong" to read "The King can do only little wrongs." 60 These fears are partly substantiated by an examination of the Act and its treatment by the courts.

The Act expressly relieves the Government of liability for acts done with due care in accordance with a federal statute or regulation. 61 Thus, flights which would constitute nuisance or negligence because of the dangers they impose on the surrounding environment can be legitimizied by the umbrella of protective regulations. Further, the Supreme Court has held that "liability does not arise by virtue either of United States ownership of an 'inherently dangerous commodity' or property, or of engaging in an extra hazardous activity." 62 In so

54. Id. § 2733(b)(5).
57. Id. § 2674.
58. Id. § 1346(b).
60. Id. at 60.
holding, the Court in Dalehite rejected the lower court finding of the applicability of nuisance, stating that the "Act does not extend to such situations, though of course well known in tort law generally."\(^6\) The Court believed that the use of "wrongful" in the Act was largely limited to trespasses "which might not be considered strictly negligent."\(^6\)

Dalehite's apparent requirement of negligence before liability is found should not be understood as a complete rejection of related tort theories, particularly that of nuisance. As noted by Dean Prosser, the nuisance theory is, in general, finding increasing judicial support, requiring only a finding of actual interference with the use of the land.\(^6\)

The Act provides for governmental liability for torts similar to that of private individuals, who of course are subject to actions based upon nuisance. Additionally, the enumerated exceptions of the Act\(^6\) do not preclude nuisance actions and there is little to indicate that Congress intended to do so, Dalehite to the contrary notwithstanding. In Smith v. United States\(^6\) a district court expressly mentioned a showing of public nuisance as a ground for recovery.

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63. *Id.* at 44. The Court in so stating apparently was referring only to that use of nuisance law which assumes strict liability. The Court's supporting discussion mentioned only that the Federal Tort Claims Act did not intend to found governmental liability on extra-hazardous activity or ownership of an "inherently dangerous commodity." The Court noted that the "Act does require some brand of misfeasance or nonfeasance, and so could not extend to liability without fault. . . ." *Id.* at 45. It seems, therefore, that the Court probably was rejecting only nuisances based on a particular type of tortious conduct, not nuisance as a field of tort liability. As the late Dean Prosser explained, nuisance "has reference to the interests invaded, to the damage or harm inflicted, and not to any particular kind of act or omission which has led to the invasion." W. Prosser, *supra* note 42, at 573.

64. 346 U.S. 15, 45 (1953). The Court's acknowledgement of a theory of liability based upon trespass suggests additional support for allowing actions under the Federal Tort Claims Act for nuisance. Dean Prosser remarked that "the line between trespass and nuisance has become wavering and uncertain." W. Prosser, *supra* note 42, at 594. The crucial distinction between the two tort theories lies in the nature of the interference with the land:

A trespass is an invasion of the interest in the exclusive possession of land, as by entry upon it. A nuisance is an interference with the interest in the private use and enjoyment of the land, which does not require interference with the possession.

Re: *Restatement (Second) of Torts* § 821D, comment e at 43 (Tent. Draft No. 16, 1970).

65. W. Prosser, *supra* note 42, at 71. See also Nestle v. City of Santa Monica, 6 Cal. 3d 920, — P.2d —, — Cal. Rptr. — (1972) where the California Supreme Court found the nuisance theory not to be precluded under California's Torts Claims Act. The Court found:

Since it is well-documented that a nuisance theory provides an effective means for redress in a wide range of actions resulting from pollution including noise disturbance, it appears that . . . the Legislature intended to preserve this additional weapon in the arsenal available to combat grievous injury to the environment.

*Id.* at 936-37.


Other courts have found liability on grounds that mitigate the harshness of the Dalehite test, as where military aircraft have flown below the altitude requirements of the Civil Air Regulations or where state law has been violated. One court has held that such facts constitute negligence per se and thereby warrant recovery for damages caused by noise. In *Wildwood Mink Ranch v. United States* a district court employed a balancing test of negligence, weighing "the risk and the probability and extent of harm against the expediency of the course of conduct pursued." Such a test would be useful in military cases in that it would allow the claimant to introduce the growing evidence of harm caused by noise and would promote inquiry into the laxity of safety control over military personnel, particularly in densely populated areas. Another court has found that if it is established that military flights have caused certain injuries, then a rebuttable presumption of negligence is created. This latter approach is certainly reasonable in view of the difficulty that claimants have in ascertaining exact altitudes of flights, prescribed paths, and in assessment of quantitative noise levels.

The second major obstacle to recovery under the Federal Tort Claims Act is its exemption of "discretionary" functions. The nature of discretionary activities has been defined by the Supreme Court according to a split-level theory of planning and operational discretion. The Government is exempt from liability for injuries arising out of decisions made at the higher planning level; it becomes liable for acts caused by decisions at the operational level. In *Dalehite* the

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70. *Id.* at 75.
71. The *Wildwood* court recognized the dangers of aircraft noise and overcame the Government's objections of causation and foreseeability: It is certainly foreseeable that extremely loud and unexpected noise of the type presented here would cause mental anguish to persons on the ground, possibly resulting in bodily injury to some.

*Id.* at 74. Cf. text accompanying notes 12-18 supra & 144-46 infra.
73. See text accompanying notes 48-54 supra.
74. The provisions of this chapter and section 1346(b) of this title shall not apply to—
(a) Any claim based upon an act or omission of an employee of the Government, exercising due care, in the execution of a statute or regulation, whether or not such statute or regulation be valid, or based upon the exercise or performance or the failure to exercise or perform a discretionary function or duty on the part of a federal agency or an employee of the Government, whether or not the discretion involved be abused.
76. 346 U.S. 15 (1953). The *Dalehite* decision defined the discretionary protection of the Act as the "discretion of the executive or the administrator to act ac-
Court stated “[w]here there is room for policy judgment and decision there is discretion. It necessarily follows that acts of subordinates in carrying out the operations of government in accordance with official direction cannot be actionable.”\textsuperscript{77} The Court emphasized that regulations or by-laws of an agency are classically within the definition of discretion because they are essentially legislative.\textsuperscript{78} Therefore, it seems clear that flight regulations, airport location, take-off and landing glide requirements, and specified maneuvers are almost always exempt as incidental to a governmental planning function. However, once the military has undertaken an activity, it assumes an obligation to use due care in its performance.\textsuperscript{79} Thus, in \textit{Wildwood Mink}\textsuperscript{80} the Government was held liable for the negligence of pilots who were given a flight destination but not told how to make the flight. Such factors as cruising altitude, selection of flight pattern, and cruising speed are usually within the operational control of pilots and thus actionable under the Federal Tort Claims Act.

In addition to the restrictions placed on tort actions brought under the Federal Tort Claims Act, further confusion is created by the vagueness of tort theories generally—the lack of an articulated general theory of proximate cause and, especially in this area, the difficulties of determining what factors and whose regulations create the duty and standards of care. In \textit{Wildwood Mink}, for example, three theories of violation of duty were suggested: (1) violation of the Minnesota trespass statute;\textsuperscript{81} (2) violation of a federal regulation\textsuperscript{82} that proscribed flights at certain altitudes;\textsuperscript{83} and (3) violation of a duty of care apart from any civil air regulation.\textsuperscript{84}

cording to one’s judgment of the best course, a concept of substantial historical ancestry in American law.” \textit{Id.} at 34.

\textsuperscript{77} \textit{Id.} at 36.
\textsuperscript{78} \textit{Id.} at 43.
\textsuperscript{79} Indian Towing Co. v. United States, 350 U.S. 61, 69 (1955).
\textsuperscript{80} Wildwood Mink Ranch v. United States, 218 F. Supp. 67 (D. Minn. 1963).
\textsuperscript{81} \textit{Id.} at 76. The court allowed recovery partly because United States Navy pilots on a mission violated a Minnesota statute that provided that aircraft flights over the state were lawful unless flown at such low altitude as to interfere with the then existing use to which the land or water, or the space above the land or water, is put by the owner, or unless so conducted as to be imminently dangerous or damaging to persons or property lawfully on the land or water beneath. \textit{Id.} at 75. \textit{Citing} MINN. STAT. ANN. § 360.012(3).
\textsuperscript{82} 14 C.F.R. § 60.17 (1962) (superseded).
\textsuperscript{83} 218 F. Supp. at 70-74.
\textsuperscript{84} \textit{Id.} at 74. A fourth theory of duty was suggested in United Air Lines v. Wiener, 335 F.2d 379 (9th Cir. 1964), \textit{cert. denied}, 379 U.S. 951 (1964). There government liability was founded upon a violation of an Air Force regulation which established policy to be followed by local base commanders in selection of flight training areas and flying procedures. The neglect or error of the base commander was viewed to be
The use of state and local statutes as a means of establishing a duty of care is not common, but as used in *Wildwood Mink* it is an expedient tool for expanding the list of remedies available against dangerous military aircraft operation. There are few statutes covering military activities and fewer that could pass Constitutional muster because of preemption by federal assertion of control in the area. The states may not regulate the operation of military facilities; they usually have no proprietary right over airports serving military planes; and they have no sovereignty over the airspace of the United States. The source of authority possibly left to the states is in the exercise of police power and enlargement upon the theory of trespass, so that noise and other emissions of aircraft which interfere with the user or use of land would be subject to state regulation. Arguably, such protection of local health and safety would not conflict with congressional authority over the nation's defense, would not interfere with an area requiring national uniformity, and could be drafted so that it would not conflict with legitimate military rules and federal law. Recognizing that New York might require an entirely different level of protection than Nevada, adaptation of military policies to local needs would best protect those needs and would not hamper America's defensive posture. The military is increasingly cognizant of the hazards of flight in urban areas, and if the states press for military recognition of other areas vulnerable to damage from military activities, such as state parks, aviaries, and animal refuges, there would be little added burden to defense operations. If direct state coverage is precluded, a broadening of the scope of tort law and creation of new duties of care could indirectly serve the same end of protecting endangered areas. Just as military regulations already generally prohibit pilots from flying over urban areas with afterburners, so also might the state discourage such

within the area of operational discretion; it was the formulation of the regulation which involved planning discretion. 335 F.2d at 394.

85. Based on U.S. CONST. art. VI, § 2. Most states do not attempt to regulate military facilities. For example, California enacted the first state aircraft noise abatement law, CAL. PUB. UTIL. CODE § 21669 et seq. (West Supp. 1971), but airports operated by the United States remained expressly excluded. Id. § 21661.


87. See note 81 supra. Such a statute could be similar to or an enlargement of the Minnesota law. MINN. STAT. ANN. § 360.012(3) (1966).

88. For an examination of areas of control left to the states, see Loma Portal Civic Club v. American Airlines, 61 Cal. 2d 582, 394 P.2d 548, 39 Cal. Rptr. 708 (1964).

89. Perwien interview, supra note 17.

90. Id. However, Anthrop makes a contrary statement:

A case in point is the Alameda Naval Air Station which lies adjacent to the city of Oakland, California in the heart of a metropolitan area. Over 1.75 million people live within twelve miles of the runway. Berkeley and Oakland residents frequently find themselves rudely awakened early Sunday morning by jets streaking over the East Bay hills with after-burners blazing.
activities in other areas where the consequences are environmentally harmful.

In sum, the trend away from governmental immunity to tort claims should be hastened by new federal legislation, innovative state enactments, and judicial decisions narrowing the discretionary exemption clause and expanding the scope of "wrongs or omissions."

II

THE NEW BALANCE OF INTERESTS

The courts and Congress must be alert to a new interplay of interests and the distinguishable differences between civilian and military aircraft operations, the latter of which should be held to closer scrutiny and higher standards. Cases such as Martin and Wildwood Mink—whatever objections exist to their application in the commercial arena—are peculiarly appropriate to situations involving military aircraft, where courts must assume a more active role in protecting citizens from their agents.

It is arguably true that defense functions require a high degree of legal immunity because combat readiness, technological development, testing for continued improvement of military capabilities, and provision for proper maintenance and service of military aircraft are necessary for the nation's defense program. However, these considerations have already been adequately provided for by substantial military appropriations and previous legislative enactments. In an era of growing awareness of the severe environmental damage caused by noise, booms, smoke, and dust, a different balancing of interests is necessary. Court decisions must respond to the pace of technology and protect interests which have become increasingly threatened. Airports once located in less heavily populated areas and serving relatively inoffensive aircraft should now be forced to analyze their present locations and operations.

Two sets of interests weigh in the balance: the public, through its need for the military, against the individual, and the needs of the military against environmental concerns. Today, the balance must tip toward the individual and the environment, and greater judicial scrutiny must be given to cases involving military, as opposed to civilian, aircraft.

First, doctrines with legal roots grounded in days of quieter aircraft, flying in less densely populated areas must change with the new facts of a different kind of noise, louder and shriller, introduced into more densely populated areas. The importance of this difference was

recognized ten years ago in *Bacon v. United States*\(^9\)

where the court pointed out that the "noise created by the F-84F was *different* from the previous aircraft used in that it emitted a shrill, high-pitched, intense noise, terrifying to the plaintiffs."\(^9\)

Second, unlike commercial aircraft and airports, whose existence and operation are solicited by the community, and are vital to that community's interests, military air bases are dysfunctional in most civilian communities. Especially in urban areas, a military airport will only marginally serve that community, and is often directly antagonistic to that community's interests.\(^9\)

Third, fewer political and economic controls exist for military aircraft than exist for commercial aircraft operation. In the commercial realm, local municipalities serve as the airport proprietors, are subject to suit, and may make noise restrictions, zoning regulations, and initiate eminent domain proceedings in view of enhancing community relations and promoting commercial acceptance.\(^9\) Further, the individual commercial airlines must endeavor to insure public patronage and financial success, by accommodating the interests of the airport community as much as possible. In addition, commercial aircraft are directly subject to FAA and CAB regulations, which in turn are subject to close congressional control.\(^9\) The military, on the other hand, is under less pressure to maximize profits or create amicable community relations, operates aircraft often far noisier and noisome than commercial planes, and is governed by rules commonly tucked away from the public gaze. Military air routes, noise regulations, and flight operations are commonly classified information.\(^9\) Even mate-

\(91\). 295 F.2d 936 (Ct. Cl. 1961).
\(92\). *Id.* at 938 (emphasis added).
\(93\). Not only are the dangers of noise, fumes, dust, and threat of accident present with military airports, but also certain social and economic problems. The military airbase shrinks the available taxable land in the community. It is largely served by a transient population, whose rapid turnover limits its members' devotion of time and interest to community affairs. It is exempt from local planning and thereby defies municipal endeavors such as architectural and land-use controls. The military airbase does not increase the community's mobility, fails to generate tourism, rarely demands the same scope of civilian support operations as does its commercial counterpart, and often occupies land which could be commercially valuable to the surrounding community.

For a discussion of the economic benefits to a community generated by a civilian airport see *Federal Aviation Administration, The Airport—Its Influence on the Community Economy* (1967).


\(96\). Perwien interview, *supra* note 17.
rial materials on airport zoning are classified "For Official Use Only."\(^{97}\) Amidst this type of insulation, the courts remain one of the few protectors of individual, civilian interests. Fourth, unlike commercial airports, many military airports can be relocated away from urban areas without jeopardizing their stated objectives.\(^{98}\)

Fifth, in view of the growing public concern and the leadership role the federal government has assumed in establishing environmental objectives, the courts should hold the Government accountable for losses occasioned by its activities. The words of the National Environmental Policy Act (NEPA)\(^{99}\) serve notice that the Government, rather than seeking a protected position, is endeavoring to achieve a vanguard role:

To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man . . . .\(^{100}\)

Congress in NEPA authorized and directed "that to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act."\(^{101}\) Congress was thereby signalling a shift in the attitude to be taken toward laws and activities that have before run counter to environmental concerns. NEPA is primarily concerned with two issues: (1) an examination of national priorities, especially as they touch upon federal spending programs which possibly encompass harmful environmental practices, and (2) an analysis of environmental problems at the earliest possible time in order to minimize detrimental effects, prevent irreparable damage, and allow inquiries before economic factors dictate the only monetarily feasible solution.

NEPA requires that all environmental intrusions be taken into account. Prior to any major federal actions which significantly affect the quality of the human environment the federal agencies involved must submit statements on the environmental impact of, adverse effects of, and alternatives to the proposed action.\(^{102}\) Basically, therefore, NEPA

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98. Perwien interview, supra note 17.
100. Id. § 4321.
101. Id. § 4332(1) (emphasis added).
102. (i) the environmental impact of the proposed action,
(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
(iii) alternatives to the proposed action,
(iv) the relationship between local short-term uses of man's environment
estimates "priorities and gives expressions to our national goals and aspirations." Of major importance is the enunciated policy that consideration of environmental circumstances is no longer to be postponed because of other factors. Rather, it is to be given high priority. The Senate Report on the matter makes this abundantly clear.

The FAA, for instance, already is under a clear congressional mandate that, whenever it is concerned with decisions which could have adverse environmental effects, it must resolve the matters as soon as possible—before "the difficulty of evaluating them in comparison with

and the maintenance and enhancement of long-term productivity, and (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Id. § 4332(C)(i)-(v).


104. As a result of this failure to formulate a comprehensive national policy, environmental decision making largely continues to proceed as it has in the past. Policy is established by default and inaction. Environmental problems are only dealt with when they reach crisis proportions. Public desires and aspirations are seldom consulted. Important decisions concerning the use and shape of man's future environment continue to be made in small but steady increments which perpetuate rather than avoid the recognized mistakes of previous decades. . . . Past neglect and carelessness are now costing us dearly, not merely in opportunities foregone, in impairment of health, and in discomfort and inconvenience, but also in a demand upon tax dollars upon personal incomes, and upon corporate earnings. The longer we delay meeting our environmental responsibilities, the longer the growing list of 'interest charges' in environmental deterioration will run. The cost of remedial action and of getting on to a sound basis for the future will never again be less than it is today.

S. REP. No. 296, 91st Cong., 1st Sess. 5, 16-17 (1969); see also 115 CONG. REC. 40,416 (1969) where Senator Jackson expressed concern over the fact that "too much of our past history of dealing with environmental problems has been focused on efforts to deal with 'crises,' and to 'reclaim' our resources from past abuses."

105. The statute to which I refer requires that a full range of environmental factors must be taken into account by Federal agencies in their decision-making. And section 105 of that statute makes it clear that this requirement and policy is supplemental to any existing statutory authority. So that while the specific statutory authority of FAA with respect to certification may be by its terms limited, and not as broad as we would otherwise like to see it, we are of the opinion that they are required by the National Environmental Policy Act to take the fullest range of environmental factors into account.


As reported by the Committee, S. 1075 provides a considered congressional statement of national goals and purposes for the management and preservation of the quality of America's future environment. The bill directs that all federal agencies conduct their activities in accordance with these goals, and provides "action-forcing" procedures to insure that these goals and principles are observed. The bill specifically provides that its provisions are supplemental to the existing mandates and authorizations of all Federal agencies. This constitutes a statutory enlargement of the responsibilities and the concerns of all instrumentalities of the Federal Government.

economic and technical factors" arises\(^{106}\) to allow a meaningful deliberation of alternatives. The FAA is pursuing such a course of action in regard to the noise emissions of civil aircraft,\(^ {107}\) but it seems the military refuses to do likewise. This inconsistency of policy between two federal agencies, governed by the same legislative mandate and responsible for similar activities, cannot be justified. There are few federal matters to which NEPA is more suitably applicable than military flight operations, which involve total government financing, pose serious environmental dangers including effects not occasioned by proven alternatives, and require immediate action as the feasibility of reversing harmful ecological practices becomes more remote and expensive each day a decision is deferred.

III

**LEGISLATIVE CHANGE**

Long-term remedies are possible only if there is a recognition of shifting priorities and an adherence to present environmental goals. Otherwise promising national legislation regarding noise has tended to freeze old priorities and to exempt the military from noise control and the NEPA mandates.

The Senate Report, discussing the noise amendment to the Federal Aviation Act, recommended "that the division between military and civil aircraft should be preserved with respect to noise standards."\(^ {108}\) The President's recent package of environmental legislation echoes this same sentiment. While the proposed Noise Control Act of 1971 declares a federal policy "to promote an environment for all Americans free from noise that jeopardizes their health or welfare,"\(^ {109}\) it excludes coverage of these "military aircraft, weapons, or equipment that are designed for combat use"\(^ {110}\) or "designed for use in experimental work."\(^ {111}\) While these distinctions and exemptions may sometimes be warranted to avoid what former Assistant of the Air Force Robert Charles called "an unacceptable constraint on the flexibility of ground and air operation of military aircraft,"\(^ {112}\) they should not be taken as *carte blanche* approval of a military right of noise propogation.


\(^{110}\) *Id.* § 3(c)(ii).

\(^{111}\) *Id.* § 3(c)(iii).

\(^{112}\) *Hearings on H.R. 3400 and H.R. 14146 Before the Subcomm. on Transportation and Aeronautics on Aircraft Noise Abatement of the House Comm. on Interstate and Foreign Commerce, 90th Cong. 1st & 2d Sess. 10 (1968).
However, countervailing policies have also been expressed. The Environmental Protection Agency's analysis of the proposed Noise Control Act stated that "the policy of the proposed legislation will . . . dictate that all feasible steps be taken to improve the noise characteristics of even these [military] articles." NEPA recognizes a continuing responsibility of the federal government to "assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings." Thus, while no legislator has dared to tread directly on this military terrain, there is an avowed policy that military noise standards conform, whenever feasible, with environmental policy.

The problem then resolves itself into putting teeth into the gummed jaws of rhetoric—something more than a policy pronouncement is required. The most practicable alternatives seem to lie in first expanding the rights of recovery available in existing legislation, and second creating new noise guidelines and regulations applicable to the military.

A. Broadening Compensation Under Existing Legislation

Without sacrificing military capabilities or changing military policy, Congress could recognize that damage to man and his environment is frequently a cost of military strength which should be internalized and equalized. Tax burdens alone do not accurately reflect the total cost of defense. The damage inflicted upon the environment by military flight operations is also a cost and is usually confined to those areas nearest the installations. To the extent that these costs are not absorbed in tax liabilities and thereby distributed to the nation as a whole, those living in proximity to such flight operations pay a proportionately higher cost for their defense. The external costs of military flight operations should not weigh oppressively on some while others who are profiting from the same protection escape the full burden of its cost. It is to be noted that this stands in contrast to commercial aircraft operations, where proximity to airports carries both significant advantages as well as disadvantages. By liberalizing the right to

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113. COUNCIL ON ENVIRONMENTAL QUALITY, supra note 109, at 198.
115. See text accompanying notes 108-11 supra.
116. It is to be noted that from its inception, the Government recognized that defense priorities could not be used as a rationale for excessive imposition upon the rights of the homeowner. U.S. Const. amend. III.
117. That the teeth of NEPA have little cutting edge is demonstrated by the response of the military services to the reporting requirements. The three branches have asserted that their activities already comply with the provisions and policy of the Act. "The Department of the Army concluded that it has no known policies or statutory limitations which prohibit or limit compliance with the Environmental Policy Act." 1 BNA Environment Rptr. — Current 28:698 (1970).
118. For a discussion of the economic advantages associated with commercial airports see FAA, supra note 93.
compensation for military aircraft damage Congress could correct this inequity, provide a stimulus for reducing the needless environmental abuses caused by military aircraft, and still permit the judiciary to adjust interests and eliminate frivolous claims.

General provisions modifying the Military Claims Act and the Federal Torts Claim Act should include (1) explicit recognition of a cause of action in nuisance, (2) compensation for significant damage found to be less than a taking, (3) a shifting burden of proof depending upon the frequency, duration, and sound amplitude of flight operations, and (4) classification of sonic booms as explosions, designated as actionable ultrahazardous activity.

While the foregoing measures would largely be protective and not preventive, if monetary recoveries reached unacceptable levels, Congress would feel compelled to author a more permanent solution. In any event, the expansion of any legislation should be aimed at keeping the federal government in the forefront of environmental protection, safeguarding not only man, but also his world.

B. New Legislative Guidelines

While liberalizing compensation of damaged property and per-
sonal injury achieves a more equitable balance of interests, guidelines and restrictions of military operations are needed to assist the courts in their determinations, the military in its operations, and the public and wildlife in its enjoyment of the environment—eliminating noise which is unesthetic, annoying, and damaging, but for which a showing of injury is difficult. Guidelines and regulations, could probably best be implemented through a commission within the FAA, which already has expertise in the area, within the EPA, or within the Department of Defense. Whatever the form of implementation, the following substantive considerations should be kept in mind.

First, it is important that military aircraft such as personnel carriers, cargo planes, and other non-combat craft be held strictly within certain noise levels. The argument that noise restrictions will reduce combat effectiveness applies to only a portion of military aircraft. The penumbra of the rationale must not be used to exempt all aircraft operations from rigid noise guidelines. Instead, those aircraft which can be fitted with noise reduction devices without impairing defense capabilities should be so equipped.

Second, unlike commercial airports, military airbases need not lie in heavily populated areas. Courts will rarely question the judgment of the legislative or executive branches contesting the location of a government airport. If, by necessity, bases are situated in urban areas, regulations must specify (1) the optimal location of airports, (2) the use of preferential runway systems to avoid populated areas, (3) restrictions on runway use during particular periods, (4) early power reduction in take-offs, (5) adjusted glide angles of landings and take-offs, (6) types of planes allowed to use certain facilities, (7) use of sound insulation equipment, and (8) other possible remedial steps to reduce the noise which necessarily surrounds the airport.

Third, funds should be provided for a federally coordinated effort at stimulating local communities to enact and enforce appropriate

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122. See, e.g., the recent proposal of Senator Alan Cranston to transfer jurisdiction over airport noise control from the FAA to the EPA because of alleged FAA over-emphasis on and yielding to industry demands. U.S. Senator Alan Cranston Reports to Californians, Oct.-Nov. 1971, at 2.


125. See, e.g., note 17 supra.

126. For a discussion of the effectiveness of climbout adjustments see Anthrop, supra note 90, at 21.

127. See generally Federal Aviation Administration, NOISE ABATEMENT: TECHNOLOGY, PUBLIC LAWS AND RULES, FAA NOISE ABATEMENT PROGRAMS (Feb., 1970).
zoning laws in areas adjacent to newly located airports.\textsuperscript{128} Such action would be decidedly cheaper than acquiring excess land through eminent domain in order to provide a noise buffer zone. But where local communities refuse to cooperate\textsuperscript{129} there may well be no viable alternative inasmuch as zoning ordinances are within the police power of the state and hence removed from direct federal control. Such situations would rarely be encountered, however, since it would always be more profitable for the community to continue to collect taxes on a property zoned for business or agriculture, for example, than for the property to be exempt from local taxation due to federal ownership.

Fourth, while some planes arguably are noisy by necessity, operations should be geared to minimize the noise level reaching the environment. Guidelines for handling and routing planes on non-essential missions should be established.

Finally, these regulations should be authored within the general policy goals of NEPA. Violation of specific regulations should be evidence of negligence per se, absent a compelling countervailing interest of the military in a particular instance. Activities conducted by the military contrary to the general stated policy should be carefully scrutinized by the courts and damages awarded in cases of significant deviation. Continuing activities unjustified by a compelling military interest, where alternative means are available, should be subject to the injunctive process.\textsuperscript{130}

The authors recognize that some of the above proposals have already been provided for in military regulations. But while the

\textsuperscript{128} See generally Veneklasen et al., Basic Factors Regarding Airport Noise, \textit{Acoustics}, Nov. 2, 1970:

1. For a single bi-directional runway operation, the airport should own or control the land use of an area 20 miles long and 2 miles wide, i.e. 40 square miles of area.
2. If multiple runways are used, still all parallel, the area must be increased by the separation between the runways. (The minimum separation is approximately 1,000 feet for two runways, and may be as much as 6,000 feet for four.)
3. The land within this boundary should be forbidden to use for residences, schools, hospitals, churches and other noise sensitive activities. History shows that legal action is an almost inevitable recourse if such uses are ensnared within the prescribed area of an expanding airport operation.
4. Commercial or industrial uses may not be presumed to be compatible within the prescribed area, because the associated administrative and clerical activities are sensitive to noise. Even many manufacturing operations cannot tolerate extreme or frequent noise exposure.

\textsuperscript{129} See, e.g., Perwien interview, \textit{supra} note 17, in which it was revealed that the city of Alameda has not only allowed the recent construction of $50,000-60,000 homes directly under the landing and takeoff patterns of Alameda Naval Air Station, but has inexcusably permitted a junior college to be similarly located.

\textsuperscript{130} This proposal is made recognizing that few courts and fewer legislators are likely to cross the military establishment to this extent.
military has been quite willing in the past to enact regulations, it seems most reluctant to enforce them.\textsuperscript{131}

\textbf{CONCLUSION}

Noise is a slow killer, a disabler, a molester, and, viewed most benevolently, a nuisance. Increasing public pressure has prompted legislation at both the federal and local level to remedy this intolerable situation, yet military flight operations, which are the loudest, shrillest, and most damaging, have unjustifiably escaped effective controls.

The most promising legislation in the field of aircraft noise mitigation is the noise abatement amendment to the Federal Aviation Act of 1958.\textsuperscript{132} Yet the amendment applies only to civil aircraft certified by the FAA. State legislation, such as California’s Foran Aircraft Noise Control Act,\textsuperscript{133} also specifically exempts military planes and airports from regulation. Local controls, such as those imposed by the New York Port Authority in exercise of its proprietary rights over airports, designed to reduce noise generation levels of airplanes,\textsuperscript{134} fail because of conflict with the Supremacy Clause and congressional authority over the nation’s defense. Finally, the Department of Defense is too slowly taking responsibility in the self-governance of its noise emissions and cannot be expected to make the necessary adjustment in its interest without outside pressures, controls, and oversight. One author has claimed that:

\textquote{The Department of Defense has made no effort to develop quieter jet aircraft, claiming that it cannot afford the weight penalty that quieter engines would impose . . . . Defense has embarked upon a public relations campaign to convince the American public that they should not only tolerate but welcome this assault on their ear-drums because the military establishment is defending them. This country’s military brass seems quite willing to destroy our environment in the name of defending it.}\textsuperscript{135}

The cases litigated in the United States relating to sonic boom damage generally involve military aircraft, which are often based in the heart of metropolitan areas. Landmark cases in the field of damages from aircraft operation, such as \textit{Causby v. United States},\textsuperscript{136} usually involve complaints directed against military flight operations. Yet while

\begin{itemize}
  \item \textsuperscript{131} Cf. notes 52 & 117 supra; note 175 infra.
  \item \textsuperscript{135} Anthrop, supra note 90, at 15.
  \item \textsuperscript{136} 328 U.S. 256 (1946).
\end{itemize}
the courts have been instrumental in protecting individuals victimized by military aircraft, this attempt at protection has generally been restricted to Constitutional issues and narrow legislative enactments which respect the military argument of combat effectiveness by granting either partial or complete exemption to military flight operations. The result is a narrow range of remedies in an area where injured plaintiffs face considerable evidentiary, statutory, and practical obstacles.\textsuperscript{137}

To repel this attack on the environment, a combination of zoning, legislation, increased research, particularized regulations, and a more enlightened judicial attitude is required. However, given the sanctified position of the military and its inexplicable reluctance to compromise or even enforce its own regulations, effective change is probably not soon forthcoming from the legislative branch.

Immediately effective correction of present abuse should be achieved in the courts. Prior court decisions have been too reluctant to compensate aggrieved complainants for injuries caused by military aircraft. If the courts would recognize the inexcusable fact that the law has failed to remain abreast of technology and appreciate the clear public mandate for environmental protection, they then could utilize their unique position to adjust the individual inequities resulting from military flight operations. Such a change in judicial stance may well be the proper, if not the only, catalyst for inducing the legislative branch to author a permanent solution. Absent such legislative or judicial changes, the continued pervasiveness and destructiveness of military aircraft noise may well become another inscription on man's epitaph.

\textit{Frederick L. McKnight}

\textit{Laurens W. Youmans}

\textsuperscript{137} See text accompanying notes 19-90 \textit{supra}. 
MILITARY AIRCRAFT NOISE

APPENDIX

I

EFFECTS OF AIRCRAFT NOISE

A. Effects of Aircraft Noise Upon the Ear

Man's tolerance of noise is gauged by various standards, all of which indicate that the level of noise imposed upon a military airport community can seriously damage the human hearing mechanism. The unacceptability of this noise level is dramatized by comparisons to magnitudes of noise for other human activities. Consider some common examples of noise expressed in decibels.

<table>
<thead>
<tr>
<th>Source of Sound</th>
<th>Decibels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet Rocket Launching</td>
<td>175</td>
</tr>
<tr>
<td>Jet Plane at Takeoff</td>
<td>150</td>
</tr>
<tr>
<td>Machine Gun</td>
<td>130</td>
</tr>
<tr>
<td>Threshold of Pain</td>
<td>125</td>
</tr>
<tr>
<td>Jet Airplane Passenger Ramp</td>
<td>117</td>
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<tr>
<td>Motor Cycle</td>
<td>111</td>
</tr>
<tr>
<td>Riveter</td>
<td>107</td>
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<tr>
<td>Electric Power Station</td>
<td>95</td>
</tr>
<tr>
<td>Rush-hour traffic</td>
<td>91</td>
</tr>
<tr>
<td>[Long term exposure with known noise-induced hearing loss (8 hours a day)]</td>
<td>80</td>
</tr>
</tbody>
</table>

There are three forms of human deafness. Conductive hearing loss is produced by injury in either the external or middle ear or both. Perceptive loss of hearing is a breakdown of either the inner ear or the auditory nerve system or both. Functional deafness occurs from physical disorders and therefore will not be examined in this Article.

138. The most common measurement of noise level is the decibel (db) system, which is named in honor of Alexander Graham Bell. The decibel gauges the physical level of noise recorded by a sound pressure meter by using a logarithmic ratio. The starting point for this noise yardstick is the minimum sound detectable by the average young adult with good hearing. This threshold sound is given the status of one unit. Because the system is compiled in a logarithmic fashion, it is somewhat misleading to those who are first exposed to it. A decibel reading of 100 db is not 100 times greater than the threshold level, for example, but rather \(10^{10}\) times as great. 113 CONG. REC. 31104 (1967). One court recently used a measure developed by acoustical experts, the "effective perceived noise level," (EPNL), in allowing a damage recovery by landowners living in close proximity to L.A. International Airport. The EPNL rating, expressed in decibels, represents the annoyance or offensive value which hearers place on the noise spectrum. Aaron v. City of Los Angeles, 3 ERC 1784 (Los Angeles County Super. Ct., 1970).

139. 113 CONG. REC. 31104 (1967).
Conductive and perceptive hearing deficiencies can be caused by noise exposure. Conductive deafness, described as "acoustic or blast trauma," occurs when a sudden noise or explosion—such as an intense sonic boom or low flying jet—ruptures the eardrum or disrupts the ossicular bone chain. Noise-induced perceptive deafness results from exposure to high levels of noise over a long period. While the exact nature of this breakdown is unclear, one authority has concluded from animal experimentation that it may be due to the "slow degeneration of the hair cells of the Organ of Corti." Perceptive deafness is the greatest concern to a community surrounding a military airport, while sonic boom-induced blast trauma concerns everyone.

B. Physiological Effects of Aircraft Noise

Exposure to military aircraft noise is damaging to man's general physical health as well as his hearing. While sudden loud noise, such as a military jet often creates, may now be common, a man's life once depended almost exclusively upon how quickly he reacted to a sudden noise. Dr. John Parr referred to this process as an "inborn alarm system," which man possesses even today, and described it thus:

A sudden loud noise spells danger and we react. In fact we automatically get ready either to defend ourselves or for flight. Our muscles tense and we jerk, our abdominal blood vessels contract to drive extra blood to our muscles and this produces that feeling of the stomach turning over, and in an instant the liver releases stores of glucose to provide fuel for the muscles which may have to fight or run. This internal upheaval if repeated again and again is exhausting physically and mentally, and ultimately can cause a nervous breakdown and then it is but a step to contracting one of the stress diseases.

Experiments conducted to determine the adverse physiological ef-

140. The middle ear contains three small bones, the ossicular bone chain, of which two, the stapes and malleus, are further connected by two tiny muscles, the stapedius and the tensor tympani. The base of the stapes fits together with the oval window. One physician has described the working process of this junction as "chainlike" since the independent movable parts belong to a whole. 113 CONG. REC. 24859 (1967).


142. "The sufferer may be quite unaware of the early stages of impairment, even when this amounts to as much as 40%, or he may be aware of deafness in one ear only, even though testing shows that both are affected." 112 CONG. REC. 18237 (1966).

143. 112 CONG. REC. 8748 (1966).

144. Id.


[T]here are some indications that prolonged exposure to excessive noise may lead to physiologic disorders. For example, animals presented with high
ffects of noise substantiate the conclusion that a strong causal relationship exists between the level of noise emitted by a military jet and the following ailments: hearing loss, warming of skin tissue, oscillation of bones in the cranial region, air vibration in nasal passages and sinuses, blurring of vision at certain frequencies, weakening of muscular organization, body fatigue, neurasthenia, increasing of blood pressure, retardation of normal child development, coronary heart disease, and color blindness.\textsuperscript{146}

\textbf{C. Psychic Effects of Aircraft Noise}

Although most people believe that jet noise is merely a nuisance, it can be a major detriment to mental health. A person exposed to normal stress who is further subjected to the level of sound which exists around military air bases, can only be “aggravated by the noise; his ability to cope with his personal problem will be lessened. The noise could trigger this person into a neurosis. Without the noise, he might be able to deal adequately with his problem.”\textsuperscript{147} In addition, constant exposure to aircraft noise can instigate fear, anxiety, loss of equilibrium and mental fatigue. For example, astronauts, upon being exposed to 145 db sounds from a jet engine at full thrust, experienced “difficulty in carrying out simple arithmetical operations and tended to put down any answer in order to end the experiment quickly.”\textsuperscript{148}

Because the psyche is involved, human reactions to aircraft noise are varied and unpredictable. Dr. Howard Bogard, chief psychologist in the department of psychiatry at the Queens Hospital Center, explained this at a hearing on jet noise nuisance:

The tolerance threshold of each human being to noise is a subjective and individual matter . . . . What only mildly annoys many

level noise for long periods of time eventually reveal endocrine and metabolic deficits which reduce the organism's ability to cope with the noise stress. . . . Continued noise exposure here results in gastro-intestinal ailments, cardiovascular disease, and tissue pathology in organs such as the kidneys and liver. Reproductive dysfunction is also found in animals similarly exposed and is believed traceable to noise-induced changes in the endocrine system. . . . Reports, mainly in the foreign scientific literatures, cite data which link intense occupational noise exposure with increased incidence of cardiovascular and neurologic irregularities in workers.

\textsuperscript{146} 112 CONG. REC. 18249-50 (1966); 113 CONG. REC. 31105 (1967).
\textsuperscript{147} 113 CONG. REC. 24857 (1967).
\textsuperscript{148} Cohen, \textit{Effects of Noise on Psychological State} in \textit{PROCEEDINGS ON NOISE}, supra note 16, at 78 [hereinafter cited as Cohen 1968]. \textit{See also}, 113 CONG. REC. 24857, where Dr. Bogard makes a similar observation:

When a person hears an unwanted noise, the person has a massive feeling of impotence and frustration. He thinks what can I do? About many things, he can do something. About an unwanted noise, he cannot. . . . Loud, unwanted noises push everything in your consciousness out. The noise takes prominence over everything else. You cannot study and concentrate when there are distractions. Intermittent noises cause intermittent distractions. It is clearly not neurotic to dislike noise.
well adjusted persons can acutely threaten the emotional stability of those who are making borderline psychological adjustments and barely holding onto reality.\textsuperscript{149}

This should not be taken to mean that aircraft noise rarely creates psychological problems. A more accurate conclusion would be that jet noise in rare instances can be the catalyst that instigates serious mental disorders.\textsuperscript{150} There are a vast number of mentally “normal” people who, while never revealing serious psychological symptoms, still experience mental problems because of exposure to the constant and high level of sound which exists around military airports. Dr. Farr of the University of Texas contends that chronic exposure to such a noise environment reduces sleep and is a factor in causing nervous fatigue, emotional disturbances, gastro-intestinal upsets and headaches.\textsuperscript{151} Dr. Julius Buchwald, a New York State Medical Center psychiatrist claims that when jet noise from airports interrupts the dreams of nearby residents they may develop psychotic symptoms such as paranoid delusions, psychoses, hallucinations, and suicidal and homicidal tendencies.\textsuperscript{152}

Although medical experts may disagree as to the possible magnitude of the problem, it can safely be asserted that daily exposure to the noise level surrounding military airports jeopardizes to varying degrees the mental well-being of residents in the adjacent community.

II

EFFECTS OF SONIC BOOMS

As an object’s velocity exceeds the speed of sound, a sonic boom results\textsuperscript{153} which can adversely affect a wide geographic area. For example, a sonic boom created by a jet flying at an altitude of 70,000

\textsuperscript{149} 112 Cong. Rec. 18243 (1966).

\textsuperscript{150} The case of a Los Angeles man who went “noise crazy,” for example, and committed suicide after fighting a gun battle with local police can hardly be blamed solely on excessive noise, as his final note indicated. One may surmise that he was a borderline mental case who was pushed beyond his tolerance point by too much noise. 113 Cong. Rec. 24862 (1967).

\textsuperscript{151} Id. at 24855.

\textsuperscript{152} Id. at 808; See also, id. at 24853, where it is noted that Stanford Research studies have proven that the electroencephalographic patterns of many sleeping persons are greatly changed by sound levels which fail to awaken them.

Dr. Buchwald further asserts that a conscious awareness of noise can affect a person’s productivity, sense of humor, ability to cope with ordinary frustrations, and may even add to frustrations that later “explode.” Ironically, a person experiencing such symptoms would probably be oblivious to their cause and would be quick to blame anything other than aircraft noise. Id. at 808.

\textsuperscript{153} See generally id. at 31108-09, for a complete technical explanation of the aircraft-produced sonic boom phenomenon.
feet has a decibel rating of 110 covering a 90 mile-wide swath.\textsuperscript{154} While the usual magnitude of the \textit{audible} sound generated by a sonic boom would cause hearing impairment only if a person were subjected to it for a long period of time, this phenomenon unfortunately creates destructive forces which cannot be detected by the human ear.\textsuperscript{155} These energies have been proven to be dangerous to the ear, even though the decibel level alone would be tolerable.

From February through July of 1964, Oklahoma City was subjected to some eight sonic booms per day, a total of 1,253 supersonic overflights, to test man's reactions.\textsuperscript{156} These were not even overflights in the strict sense of the word since they were only over the \textit{edge} of the city \textit{not} the center.\textsuperscript{157} One can only speculate on the consequences of direct overflights, but one observer described himself as “a witness to . . . how men were executing their brethren during six long months.”\textsuperscript{158} This test, plus laboratory experiments, conclusively determined that unperceived vibrations in sonic booms caused biological tissues, nervous systems, and bone cells to lose their chemical composition. The chainlike essence of the bones in the middle ear lost that quality since the vibrations caused the bones to form a new tissue—bone cement. Consequently, a knitting of the bones occurred, producing ankylosis and deafness.\textsuperscript{159} While it had been known that vibrations of this order were a major factor in bringing about porosity of bones, it had not been conclusively determined that a sonic boom could achieve the same effect. The Oklahoma experiment laid that unanswered question to rest.\textsuperscript{160} According to Cohen “one cannot rule out the possibility that the startle quality of the boom may trigger attacks in cardiac patients, induce seizures in epileptic sufferers, or generally aggravate those illnesses for which rest and ab-

\begin{itemize}
\item \textsuperscript{154} \textit{Id.} at 807.
\item \textsuperscript{155} While the sonic boom is clearly audible to man it also produces inaudible vibrations of great magnitude. Although man's hearing can detect 20-20,000 cycles per second it is unable to perceive anything beyond this. \textit{Traumatic Medicine}, \textit{supra} note 141, at 147.
\item \textsuperscript{156} 113 \textit{Cong. Rec.} 793 (1967).
\item \textsuperscript{157} \textit{Id.} at 24847.
\item \textsuperscript{158} \textit{Id.} at 807.
\item \textsuperscript{159} The vibrational energy which can be produced by numerous forms of mechanization, including the sonic boom of military jets, can cause a form of deafness called otosclerosis. “Otosclerosis is a sound, or sonic disease” which can only be detected by the disability it inflicts. \textit{Id.} at 806. In short it can be defined as the “formation of spongy bone” in the inner ear. W. \textit{Dorland, Illustrated Medical Dictionary} 1074 (24th ed. 1965).
\item \textsuperscript{160} This same degeneration of bone tissues in the ear is now being found in pilots and astronauts. Dr. Zhivko Angelusheff of the New York Academy of Medicine concludes that, in his opinion, “the loss of calcium, the osteoporosis, could have been observed likewise among the population of Oklahoma City which had been exposed to a six month-long sonic boom.” 113 \textit{Cong. Rec.} 808 (1967).
\end{itemize}
sence of excitement are believed essential to recovery."\textsuperscript{161}

Former Surgeon General William H. Stewart is of the same opinion:

Aside from hearing loss, it has been demonstrated that noise can cause physiological changes. These include cardiovascular, glandular, and respiratory effects reflective of a generalized stress reaction. These changes are typically produced by intense sounds of sudden onset—the sonic boom is the most frequently cited example—but can also occur under sustained high level, or even moderately high, noise conditions.\textsuperscript{162}

Furthermore, the sonic boom has substantially adverse psychological implications. Cohen reports that

\textit{[t]he effects of prolonged sleep deprivation are well known: losses in mental and physical functioning, irritability, hallucinatory tendencies, and idea confusion . . . . In any case, it is quite evident that noise can frustrate desires for privacy, rest, relaxation, and sleep. For example, surveys of communities impacted by significant subsonic and supersonic aircraft flyover noise have found that the interruption of rest, relaxation, and sleep are the major underlying causes of registered complaints, and that such complaints grow with increasing amounts of aircraft noise exposure . . . .}\textsuperscript{163}

Evidence is beginning to mount that the sonic boom is posing a serious threat to nature.\textsuperscript{164} This has been amply demonstrated by one authority who contends that major and irreparable damage has already been inflicted upon unique areas by this man-made phenomenon.\textsuperscript{165}

### III

**EFFECTS OF NOISE ON ANIMALS AND WILDLIFE AREAS**

Sonic booms from U.S. Air Force jets are destroying some of America's greatest natural treasures, the director of the National Park Service says.\textsuperscript{166}

This newspaper account, which related the testimony of George Hartzog before a House Appropriations subcommittee, was the most recent public condemnation of military aircraft noise hazards which

\textsuperscript{161} Cohen 1969, \textit{supra} note 145, at 10-11.
\textsuperscript{162} Statement by W.H. Stewart, in \textit{PROCEEDINGS ON NOISE}, \textit{supra} note 16, at 11.
\textsuperscript{163} Cohen, 1968, \textit{supra} note 148, at 83-84. \textit{See also Cohen, 1969, \textit{supra} note 145, at 11-12; W. Rosenblith, in \textit{PROCEEDINGS ON NOISE}, \textit{supra} note 16, at 15.}
\textsuperscript{164} \textit{See, e.g., notes 2 & 3 \textit{supra}; notes 182-84 infra.}
\textsuperscript{165} W. Shurcliff, \textit{SST AND SONIC BOOM HANDBOOK} 23-24 (1970). \textit{See also Lundberg, \textit{Acceptable Nominal Sonic Boom Overpressure in SST Operation}, in \textit{PRO-
CEEDINGS ON NOISE}, \textit{supra} note 16, at 279.}
\textsuperscript{166} San Francisco Chronicle, May 21, 1971, at 12, col. 6.
were not strictly related to human victims. The most dramatic examples of damage, however, were obtained from the Oklahoma City tests. The owner of a chicken farm testified that after the first boom his birds became very excited and began to dash themselves against their cages. After a few days of exposure to sonic booms they began to lose their feathers. Soon they stopped eating, stopped laying eggs, began to hemorrhage internally, and finally died. Before the sonic boom tests began the chicken farmer could count 10,000 healthy birds, while immediately after the six month period he had only 4,000 still living. During the Oklahoma tests experimental rats became sterile and some chickens sustained rupture of their reproductive organs. One physician summed up the results quite morbidly: "The danger to humans is striking home. When the human chicken begins to lose his hair and his wife experiences unwanted abortions and sterility we will see headlines."

There are many examples which bear out the fact that we can no longer assume that nature is adequately protected from the destructive forces of military aircraft. Even the plankton of the oceans suffer fatal consequences when exposed to the sonic boom of military aircraft. Researchers have killed mice with 175 db and dogs have died when exposed to ultrasonics for 12-18 hours.

Certainly, in light of such scientific evidence, military practices that permitted 83 recorded sonic booms within a span of less than three months over a National Park must be banned. Military procedures which allow jets to fly at 1000 foot altitudes through Yosemite National Park are not justified by any ground other than

167. See text accompanying notes 156-60 supra.
168. 113 CONG. REC. 807 (1967).
169. Id. at 31110. By no means was the Oklahoma experience an isolated domestic event. A Swiss forester described how the usually shy animals of the wood became "transfixed" upon hearing the roar of an airplane: "[T]hey are immobilized in their stances; I could have easily put them away in my pocket." 112 CONG. REC. 18243 (1966). French beekeepers demanded that the government abolish flights over their apiaries because during such overflights their insects lost their sense of direction and stopped collecting honey while all of the larvae in the hives died. In England, circus elephants refused to perform while military aircraft flew overhead. Id.
170. 112 CONG. REC. 18243 (1966).
171. Within five minutes the protoplasm of the chloroblast "turns into a homogenous pendant; the grains of starch change their structure and condense. As a result a discoloration takes place", and the plankton dies. Id.
172. 113 CONG. REC. 24853 (1967).
173. 112 CONG. REC. 12205 (1966).
174. 113 CONG. REC. 800 (1967).
175. Alameda Times-Star, July 31, 1970, at 8, col. 1; see also the series of KCBS "File 74" editorials which abundantly demonstrate the military's complete disregard for even their own regulations relating to flights over Yosemite National Park. The following exemplary quotes, taken from some of the broadcasts, should illuminate the reader:
a national emergency. All living creatures share this noise hazard and man can no longer be content to do nothing.

IV

RESEARCH AND DEVELOPMENT

There are presently numerous research efforts being conducted in aircraft noise abatement.\textsuperscript{176} However, difficulty arises in particularizing these efforts to the highly sophisticated aircraft of the military. The military branches must increase their research as it pertains uniquely to their problems. Such efforts will probably have a beneficial spinoff effect on commercial industry because of the military's vanguard position in aviation.\textsuperscript{177}

Military research to date has been generally undistinguished. Until recently the "only concern which the military had with respect

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March 2, 1970. . . File 74 . . . expects to get the same reception that Yosemite Park people received three years ago when they wrote to Hamilton, LeMoore, China Lake, George and Edwards Air Bases . . . that no routes had been authorized through Yosemite . . . and flight logs showed no deviations. . . . But the low level tree top buzzing continues. Ranger Marks has a picture taken from the rim with three planes whizzing by below him in the Valley. They even shoot the canyon and emerge in the high country to fly a scant 100 feet above Lake Tenaya.

March 13, 1970. . . Mr. R. Walton writes . . . 'You may want to check also with units of the Air National Guard, especially Fresno. I have heard conversations in which fliers brag about putting in their time while buzzing the Sierras.'

April 2, 1970. . . This station is convinced that Yosemite's serenity is just as important as military security. If airspace can be restricted above military areas, why not above tourist-jammed national parks?

May 1, 1970. . . This is a progress report . . . into the disturbing and dangerous practice of the buzzing of Yosemite National Park by low flying military jet planes. The facts are clear. It happens. Regularly. And base commanders in Northern California have not solved the problem.

June 15, 1970. . . Mr. Eldor Pederson says that at 3:00 p.m. on Thursday, June 4th, he was at lovely Glacier Point in Yosemite . . . when the serenity of the valley was shattered by the crack and scream of a jet flying several hundred feet below him through the valley.

August 11, 1970. . . First, a note from Jim Wullschleger . . . who says: ' . . . I had just completed a ten-mile climb from the floor of Yosemite Valley to the top of Half Dome. As I was resting, an Air Force jet zoomed by . . . climbers near me said it was the third time in four hours. Fifteen minutes later, I was horrified by a jet streaking past us less than a stone's throw away. Who's responsible for such a thing?'

These excerpts illustrate File 74 Editor Fred Wilcox's tireless and as of yet fruitless campaign to ban such practices over our national parks. The military brass have assumed a generally aloof position and have contented themselves by issuing repeated reassurances that either the military was not to blame or that further infractions would be strictly disciplined. Editorials and military responses are on file with the Ecology Law Quarterly.


\textsuperscript{177} See H.R. REP. No. 36, supra note 124, at 12.
to noise generated by airframes or by powerplants was the effect of any such noise upon the military personnel, either operating the aircraft in the air, or servicing the aircraft on the ground." 178 The military also has directed its research toward noise abatement which directly aided combat effectiveness. "Accoustical science and technology have provided the Army with an inaudible motor for front-line use, the Navy with silently operating submarines, and the Air Force with an almost silent plane." 179 With changing priorities these achievements may also be made to reduce the roar of planes in domestic use.

Another significant part of the military research efforts has been directed not toward changing the noise level, but in encouraging greater community tolerance. "[F]actual information on noise and the sonic boom together with the efforts and means being advanced to curb them were disseminated to Air Force personnel and the public through various mass media. Particular emphasis was put on a public relations program at the individual base level." 180

Of the military branches, the Air Force has done the greatest amount of noise research, primarily in conjunction with the Armed Forces-National Research Council Committee on Hearing and Bioacoustics. While the program grew in the early fifties, from 1957-1967 the "effort on this program directed toward control of noise from aircraft operations, particularly the noise received on the ground, has decreased each year." 181 In discussing the situation, the President's Panel on Aircraft Noise Alleviation 182 offered few words of encouragement. The Panel concluded that "there are no indications of a major technological breakthrough." 183 Their conclusions were probably sound and self-fulfilling in light of their recommendations:

No major research effort on in-flight noise suppression is anticipated. The reason is that the performance decrement inherent to all noise reduction methods is incompatible with military requirements for defense missions. 184

In view of this prevailing attitude, technological development will be stymied unless the compelling reasons for noise abatement are translated into legislation. However, deferring to political realities,

178. Id.
179. Rosen, Noise Pollution: A Need for Action, in Air Pollution Hearings, supra note 123, at 921.
180. OFFICE OF SCIENCE AND TECHNOLOGY, JET AIRCRAFT NOISE PANEL, ALLEVIATION OF JET AIRCRAFT NOISE NEAR AIRPORTS 54 (1966).
181. Id. at 49.
182. Id.
183. Id. at 57.
184. Id.
legislation will probably only be enacted if the military acknowledges that technological development will be an effective and acceptable remedy. Such an acknowledgment is unlikely when research is already shunted to the side.