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PB82-137878

The Government Executive's Guide to Arson Prevention and Control: A Handbook on Information Systems and Action Programs

Battelle Law and Justice Study Center Seattle, WA

### Prepared for

Federal Emergency Management Agency Washington, DC

Nov 81



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# THE GOVERNMENT EXECUTIVE'S GUIDE TO ARSON PREVENTION AND CONTROL: A HANDBOOK ON INFORMATION SYSTEMS AND ACTION PROGRAMS

#### by

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### Prepared for:

Federal Emergency Management Agency U.S. Fire Administration Washington, D.C. 20472

Richard Strother, Associate Administrator John Lynch, Project Monitor

Revised Edition

#### November, 1981

This project was supported by Cooperative Agreement No. 80025, made to the Battelle Human Affairs Research Centers, Seattle, Washington, by the Office of Planning and Education, U.S. Fire Administration, Washington, D.C. Points of view and opinions expressed herein are the authors' and do not necessarily refelct those of the U.S. Fire Administration.



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9. Performing Organization Name a	nd Address		10. Project/Task/Work	Unit No.
Battelle Human	Affairs Research Centers			
Law and Justic	e Study Center		11. Contract(C) or Grad	n(G) No.
4000 N.E. 41st	Street		(C) USFA-80025	
Seattle, WA 98	105		(G)	
12. Sponsoring Organization Name (	and Address		13. Type of Report & P	oriod Covered
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# Note to the Reader:

This Guide represents one of many Battelle Law and Justice Study Center projects to prevent and control arson. Other materials and specific assistance, ranging from training and technical assistance to multi-agency strategy development, are available by contacting:

> Clifford L. Karchmer Battelle Law and Justice Study Center 2030 M Street, N.W. Washington, D.C. 20036

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# TABLE OF CONTENTS

.

			Page
ACKNOWLE	EDGEMEN	TS	iii .
EXECUTIV	ve summ.	ARY	V
Chapter			
1.	THE C	HALLENGE OF ARSON TO THE GOVERNMENT TIVE, by Clifford L. Karchmer	1
	Į.	Introduction	5
	II.	Focusing on Arson Through a "Motive- based" Early Warning Strategy	. 9
	III.	Arson Information Management Sytems (AIMS): Their Role in Arson Prevention and Investigation	11
n giblige o negoti e servici e des N	istor ( <b>IV</b> ) fr	The Role of the Government Executive: Coordination and Central Direction	13
2.	ECONO	MIC FACTORS: ARSON, HOUSING, AND BORHOOD STABILIZATION, by James Greenfield	21
	<b>I</b> .	Understanding the Relationship Between Fires and Arson	25
	II.	Housing Market Conditions and Arson	26
	III.	Government Regulatory and Subsidy Programs, and Arson	34
	IV.	Private Sector Involvement in Arson Prevention	37
3.	ARSON	I INFORMATION MANAGEMENT SYSTEMS: NICAL REPORT, by Mary V. McGuire	47
	I.	Introduction	53
	II.	New York City's Arson Strike Force	59
	III.	New Haven's Arson Warning and Prevention Strategy	67
	IV.	Knoxville AIMS Project	74

111

Same have been a set

		•		*
$\mathbf{c}$	<b>م</b> ۲		-	-
ا ب	1a		=	L
-		-		_

		Page
	V. Phoenix Fire Department AIMS Program	79
	VI. San Francisco Early Warning System and Arson-for-Profit Study Program	83
	VII. Boston AIMS Project	8.8
	VIII. Seattle AIMS Project	94
4.	JUVENILE FIRESETTERS: AN OVERVIEW OF PREVENTION, DIAGNOSTIC, TREATMENT, AND OTHER INTERVENTION PROGRAMS, by Karen Robinett and Clifford L. Karchmer	117
• • •	1. Motives and Underlying Causes	±±/
	TT Discussion and the states	121
i-	The Diagnosis and Treatment	127
5.	REVENCE-MOTIVATED ARSON: DESIGNING AND IMPLEMENTING PREVENTION PROGRAMS, by Clifford L. Karchmer	
		157
	· · · · · · · · · · · · · · · · · · ·	161
ategoradi.	II. Characteristics of Revenge-motivated	tara (tara tara tara tara)
• •		161
·* ··.	III. Transferrable Lessons: Revenge Arson and Domestic Disputes?	163
	IV. Some General Options for Revenge Arson Prevention Programs	166
	V. Steps in Planning a Revenge Arson Prevention Program	168
- :	VI. Conclusions	171

iv



#### ACKNOWLEDGEMENTS

This effort was greatly assisted by a number of officials, present and former, whose reflections on their own experience proved most helpful in reconstructing that record for the benefit of others. In Seattle, former Fire Chief Frank Hanson, Hugh Maguire, and Senior Inspector Jack Hickam of the Arson Squad were extremely helpful, as was Inspector Dennis Fowler of the Arson Squad. In New Haven, several former city officials were extremely cooperative, and we are especially grateful to Frank Logue, David Bower, and Doris Zelinsky.

Preparation of the technical report on the AIMS programs was aided, if not made possible, by the cooperation and assistance of individuals involved in managing and carrying out the seven arson prevention and control programs described in the chapter. The contributions of a number of people deserve special acknowledgement and thanks: Carole Sayle in New York; "Doss Sauerteig in New Haven; David Icove in Knoxville; Chief James Walker and Robert Belk in Phoenix; Inspector Charles Radford, Lieutenant Richard Crispen, and Barry Goetz in San Francisco; David Scondras and Ernest Garneau in Boston; and Mark Smith and Kenneth Mathews in Seattle. Additionally, the data collection, analysis, and writing done for the AIMS report by Nancy D. Sharp, Research Assistant at the Battelle Law and Justice Study Center, was a tremendous assist not only in compiling the first draft of the technical report, but also throughout the final stages of this project.

In our research for the chapter on housing factors and arson, Gelvin Stevenson of <u>Business Week</u> magazine provided an invaluable economic perspective. In gathering information for the chapter on juvenile firesetters, we want to acknowledge the insights provided by David Watanabe of Seattle, Dr. James Breiling of the National Institute of Mental Health, and Dr. Kenneth Fineman of Huntington Beach, California.

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The chapter on preventing revenge-motivated arson benefited substantially from contributions by Captain Pat McGuinness of the City of Los Angeles Arson Squad; Sergeant Delbert Kraft of the Oakland, California, Police Department; Professor Ezra Stotland of the Society and Justice Program of the University of Washington; Dr. Martin Reiser, psychologist for the Los Angeles Police Department; and Tim Huff, Director of Fire Prevention Training of the California Department of Forestry.

In the preparatory stage of this project, we were fortunate to enlist the assistance of Drs. Molly Selvin (currently with the RAND Corporation) and Jeffrey Walsh (now with Wayne State University in Detroit), two former Battelle Research Scientists, for their perspectives on organizational change factors involved in anti-arson planning and coordination.

Finally, but most important, all of us on the project are grateful to Charleen Duitsman, our project secretary, for displaying patience, offering editorial guidance, and providing a range of other valuable skills far beyond the call of duty.

vi

### EXECUTIVE SUMMARY

This Executive Guide has two objectives: first, to better enable government leaders to develop comprehensive, strategic plans for the prevention and control of arson; and second, to identify particular modes of arson preventive and reactive action programs which police, fire, housing, mental health, and other agencies might implement cooperatively. In order to address the strategic (agency coordinating) and tactical (operational) issues involved in solving a local arson problem, this guide looks beyond the broad and general "arson" label that combines together all forms of incendiary crime.

The resource material contained in this guide focuses on the most prominent motives for committing arson (economic, vandalism, and revenge); the most distinct group involved in firesetting (juveniles); and the identifiable economic, social, and personal stress factors that influence arson motives. This "motive-based" approach has been chosen for a very deliberate reason: arson <u>is</u> a preventable crime, although until fairly recently it was not viewed as being susceptible to either the prevention of individual acts or patterns of incendiary acts.

If arson is to be prevented to the maximum extent possible in a jurisdiction, it is necessary for local agencies that have not customarily mobilized individually, or worked together cooperatively in this type of crime prevention activity, to do so effectively and with a minimum of friction. The central role of the government executive is to create the environment wherein cooperation, innovation, and effective management of arson prevention and control initiatives can succeed. In order to mobilize an entire jurisdiction for arson-prevention and control, it is important for the government executive to appreciate that different types of valuable information need to be collected, analyzed, and utilized constructively in order to prevent where possible an individual from causing an arson, or a premises from becoming the "victim" of an arson.

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The government executive who wants to spearhead a total mobilization of local resources--public and private--to combat arson has four basic questions to answer. These the executive must ask of himself or herself, of key aides, of department heads and their deputies, as well as civic, business, neighborhood, and other leaders in the community. The organization of this Executive Guide follows one possible order of these questions, and the resources contained in the guide are intended to provide the executive with the tools to answer them. The key questions:

> What is the relationship of my jurisdiction's fire problem in general, and arson problem in particular, to the economic and social condition of our neighborhoods and our housing stock? (Chapter 2)

- What types of pre-fire and post-fire information on premises, individuals, and neighborhoods, can we collect and analyze in order to develop an effective Arson Information Management System (AIMS) program model? (Chapter 3)
- Are diagnostic and treatment resources in my community adequate to address the needs of juvenile firesetters, and to protect the local institutions (mainly educational) that may be threatened by this type of firesetter? (Chapter 4)
- Can police, fire, mental health, and other local agencies mount an effective program to prevent revenge-motivated arson in my jurisdiction? (Chapter 5)

Fully mobilized local efforts to prevent arson are a fairly recent occurrence in most jurisdictions. Consequently, it is important to realize that this Executive Guide reports on a variety of information systems and action programs, with the qualification that no program has been evaluated, and most have not been rigorously reviewed (with the exception of the AIMS programs studied for this project). The official who utilizes this Executive Guide is encouraged to regard it as a resource compendium and planning tool, and to invest in considerable review and reflection in order to assess the suitability for replication of one or another program or program component described in the guide.

In frequent real-world situations, the government executive comes to recognize--in league with local law enforcement officials, the media, and the public-at-large--that the community may be at the threshold of an arson epidemic. When this realization takes hold, the task of arson prevention often becomes redefined as that of quick and massive intervention--and hopefully it occurs early enough at the outset of an epidemic that the future incidence of arson can be reduced considerably. Where officials confront the ugly prospect of a looming arson epidemic, the nature of information requirements, the necessity for analyzing it throughly, and the imperative that law enforcement agencies play a role in acting upon the information--all take on a heightened sense of importance.

For these reasons, the main focus of this Executive Guide is on arson prevention and control through early intervention. Most of the program options discussed herein deal with non-criminal justice approaches--housing rehabilitation, diversion of juveniles, and mental health assistance. This focus was selected because most arson prevention programs, and many early intervention ones as well, deal with methods to alleviate the underlying problems that give rise to arson. Therefore, this Executive Guide does not deal extensively with law enforcement strategies, nor with arson task force and strike force activities. A number of excellent publications

ix

and programs already are available on these issues (see the Appendix at the end of this Summary), mainly developed by Richard Strother and the staff of the Office of Planning and Education of the U.S. Fire Administration. The resources of this Executive Guide are devoted, for the most part, to prevention and control program options for which there is no other available source of information.

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In order to meet the demand for quantities of accurate pre-fire (predictive) and post-fire (investigative) information on arson, this guide provides profiles of the seven Arson Information Management Systems (AIMS) programs that have received support from the Office of Planning and Education of the U.S. Fire Administration. The seven AIMS programs represent the most advanced state-of-the-art techniques in the collection and analysis of arson-related information available today.

The AIMS programs are profiled and discussed (in Chapter 3) in a manner that is designed to encourage the government executive to consider whether a program, or one or more of its components, might address a parallel need or resource capability in the reader's jurisdiction. In many cases, the AIMS program will be a hybrid: a combination of information needs, available resources, and utilization modes. For this reason, it is especially important that the government executive who decides to implement an AIMS program first ensure that proper research is undertaken on both the nature of the local arson problem and the degree and kinds of resources that are (or will be) available in order to fully implement the desired AIMS model.

The other chapters in this Executive Guide deal with such issues as economic factors that appear to determine or influence the nature of a jurisdiction's residential arson problem (Chapter 2); the range of programs to deal with juvenile firesetters (Chapter 4); and methods for exploring programs to prevent revenge-motivated arson (Chapter 5). Viewed together, the chapters of this guide should enable the government executive to appreciate more fully the role of strategy development, planning, and coordination in addressing each of the arson prevention and control programs that are deemed suitable for replication in the reader's jurisdiction.

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# THE CHALLENGE OF ARSON TO THE GOVERNMENT EXECUTIVE

## by

# Clifford L. Karchmer Project Director

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# Table of Contents

	·	Page
I.	Introduction	5
II.	Focusing on Arson Through a "Motive-based" Early Warning Strategy	9.
III.	Arson Information Management Systems (AIMS): Their Role in Arson Prevention and Investigation	11
IV.	The Role of the Government Executive: Coordination and Central Direction	13
ENDNO	DTES	17
APPEN	DIX	
I.	Resource Bibliography	19

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#### CHAPTER 1

# THE CHALLENGE OF ARSON TO THE GOVERNMENT EXECUTIVE

### I. Introduction

The reported incidence of arson in the United States has been increasing steadily since 1975.<sup>1</sup> Several observers cite arson committed for economic gain (arson-for-profit) as a major factor in this nationwide growth, while other sources attribute the rise to various non-economic problems that derive from complex and deeply rooted problems in society.<sup>2</sup> According to this latter view, psychological and social strains appear to be causing an upsurge in conflicts of many types--between spouses, landlords and tenants, students and school administrators, and employees and employers. For a variety of reasons (not all of them well understood), arson has become a vehicle for venting the frustrations that result from these problems. Revenge and vandalism arson, the latter caused primarily by juvenile firesetters, are two motives that appear to result from non-economic stresses.

One reasonable explanation for the increase in arson centers on the accumulation of economic, social, and personal strains noted above. Together these can increase, for example, spouse abuse and other interpersonal conflicts (believed related to the revenge motive for arson), juvenile delinquency (influencing the vandalism motive), and business slowdowns or failures (increasing the economic motive). The worsening of social, economic, or personal problems which seem to lie behind arson can occur together and certainly have done so in recent years in many areas.

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So, for a variety of reasons arson has become a ready emotional or financial outlet for many worsening problems and frustrations in our society. Patterns or small clusters of arson can grow into epidemics and may endure for long periods of time. Multi-year epidemics over the past decade have been noted in such cities as Buffalo, Detroit, Boston, New York, and Seattle.

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The mix of motives and underlying causes for arson seems to vary from one city to another because of variations in the types and relative frequencies of the different stresses, noted above, that lie behind acts of arson. Variations in rates of arson incidence may also be due to differences in the size of the particular local populations which experience each problem. Despite such apparent variations, however, many of the commonly prescribed remedies treat arson as though it were a monolithic phenomenon, due to one overall cause or resulting from one social malady. The criminal justice response of investigation and prosecution has been the most common "solution" for addressing arson. This Executive Guide emphasizes primarily preventive strategies, because of serious but unavoidable shortcomings in the law enforcement response.

A review of investigative and prosecutive responses to arson highlights the difficulties involved in trying to design, through enforcement means alone, effective arson reduction strategies. To begin with, a basic problem with measuring the true incidence of arson is that a fire's cause can be difficult to determine, and many incendiary incidents are unintentionally mislabeled as of suspicious, unknown, or accidental origin. This mislabeling makes a reliable national measure of the numbers of incendiary fires imposible. Estimates of the actual numbers of arson fires range from 25 to 50 percent higher than the reported number of arsons.<sup>3</sup>

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The transfer of cases from the investigator to the prosecutor can result in a lack of momentum and continuity. Here, a major problem is that the nature of most arson evidence is circumstantial (rather than direct) and in most cases only implicates the suspect indirectly.<sup>4</sup> Because of prosecutors' professional concerns for maximizing conviction rates, they have an understandable aversion to new or continually troublesome kinds of cases. Consequently, many prosecutors habitually avoid arson cases and may overtly or otherwise discourage investigators from pursuing them effectively.<sup>5</sup> This, in turn, can create an understandable reluctance on the part of investigators to try to interest a prosecutor in any new case that comes along. As a result, investigations can languish for lack of morale and momentum.

There are indications that suspects who commit arson out of such emotional motives as revenge and pyromania are those most likely to be caught, given the irrationality of their actions and thus the greater likelihood that they will leave behind incriminating evidence or be observed by witnesses. For this reason, those who commit arson out of strong emotion appear to be heavily represented in arson arrest and prosecution statistics, while those who commit arson involving calculation and planning stand to gain "informal immunity" as a benefit derived from their cunning and forethought. Consequently, it can be contended that the low arrest and even lower conviction rates for arson tend to dilute, substantially, the potential deterrent impact of the criminal sanction.<sup>6</sup>

Since arson law enforcement and prosecution are primarily reactive in nature (i.e., post-fire), their value as the <u>sole</u> means of arson control is, at best, an incomplete prescription for crime prevention in any jurisdiction. Largely because of the limited resources and legal authority available to them, government executives have focused on investigation,

prosecution, and punishment as the most potent remedies for Two serious implications follow from this prevailing arson. view. First, a broad range of non-criminal justice prevention or early intervention strategies may be ruled out completely, or identified too late to stem the momentum of a developing local arson epidemic. Second, exclusive reliance on the criminal sanction encourages investigators and prosecutors to "solve" arson cases, "punish" arsonists, and to "chalk up" winning statistics. These pressures often occur in a local political environment that can sway law enforcement agencies into favoring those cases where the initial evidence is most conducive to an arrest clearance. Here again, the emotional/ irrational arsonist -- the type believed to be most unlikely to repeat his or her offense--is the one likely to be caught and punished.

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To summarize the above discussion, a major reason for the difficulty most criminal justice agencies face in combatting arson is the highly reactive nature of the enforcement response--the principal arson control vehicle available to most agency officials. Traditionally, the objective of investigators and prosecutors has been the solution through arrest and conviction of committed criminal acts, rather than on some form of action to prevent future ones. Since we know that relatively few arsonists are caught, and still fewer are convicted, the threat of punishment to any one arsonist is not a highly credible one. Thus, the arrest, conviction, and incarceration sanctions serve as questionable deterrents with unmeasured impact: their probability of occurrence may be perceived to be so low that someone who contemplates an act of arson is not normally dissuaded. Consequently, while the criminal sanction has stood as society's principal weapon for combatting crime, its deterrent value seems to be as questionable with regard to most arson motives as it appears to be with regard to other forms of crime.

### II. Focusing on Arson Through a "Motive-based" Early Warning Strategy

The most common motives for committing arson are revenge, pyromania, vandalism, concealment of another crime, extortion/intimidation, and arson-for-profit. Clearly, the decisions of some arsonists to commit an act of incendiarism will be so erratic--and therefore unplanned--that they generate few if any noticeable warning signs of their intent prior to the commission of the arson act. For example, a family dispute may escalate so rapidly to the eventual arson committed by one party that no one could have foreseen the oncoming tragedy. Mentally disturbed firesetters present a similar problem of erratic as well as highly secretive behavior. In contrast, other motives for committing arson--principally for profit but occasionally for revenge and crime concealment as well--involve many steps of prior planning and stealth that can often permit a watchful observer to retrace them and look for indicators that preceded the arson.

In order to grasp better the division of arson motives into those that cluster around either rational, irrational, or mixed factors, it is instructive to examine the insurance concept of "moral hazard" as it applies to arson. A term that is drawn from insurance underwriting, moral hazard refers to the mental state of an individual whereby the interplay of certain factors (such as economic problems and the opportunity to commit arson) constitutes that individual as arson-prone, and therefore an imprudent risk to an insurer. When that concept is applied to the issue of arson motives, we can see that there are particular psychological, social, and economic pressures that weigh on pyromaniacs, revenge arsonists, and those who commit arson for monetary gain or to conceal another crime. The interplay of psychological and perhaps social stresses is far more significant, even if less subject to detection, with regard to the emotional/irrational arsonist, than with regard

to the rational firesetter. In contrast, distinct economic stress factors are salient and often clearly visible in the case of the profit-motivated arsonist.

10

The problem of arson-for-profit presents a unique prevention challenge. The financial stresses that weigh on the owner/arsonist and his or her actions in preparing for the arson and accompanying fraud leave two fairly clear and often converging trails of indicators. These may be classified simply as (1) financial stress indicators, and (2) pre-arson planning steps. Both the stresses and the planning steps are discernible as factors that affect the state-of-mind of the arsonist, i.e., his or her moral hazard. The indicators of major financial stresses (such as business slowdowns or an impending bankruptcy), and their affect on regional, local, and even neighborhood economies, often can be identified and measured with some degree of accuracy in order to aid planners, analysts, or investigators in making "arson risk" predictions with regard to neighborhoods, premises, or people.

When arson motives are arranged along a continuum that spans the extremes of "rational" to "irrational," then arson-for-profit can be posted near the former extreme (rational) with revenge and psychotic at the opposite extreme (irrational), with the other motives falling in between. A second, vertical dimension can be added which arranges the motives according to the presence of warning signs (of stress and other predictive factors) that precede the arsons. The motives can be further distinguished according to their potential for prevention and early intervention, based upon. these prior warning signs. For example, prior warning signs of a revenge arson may manifest themselves in such ways as prior disputes ranging, in degree and kind, from moderately noisy to extremely violent.<sup>7</sup> However, the problem posed by revenge-motivated arson (discussed more completely in Chapter 5 of this guide) is the widespread absence of an effective monitoring apparatus to detect the early signs, when present, and to notify authorities of those early signs that are distinct warnings. Often, neither the disputants nor those within earshot, such as neighbors and relatives, can distinguish which disputes will later escalate into violent acts such as physical assaults or arsons, and those which will remain at the shouting and threat-exchanging stage. Therefore, early intervention efforts to stem the rise in arson due to the more "irrational" motives will continue to pose a real challenge to officials. It is the purpose of this Executive Guide to enable government leaders to meet this challenge in an informed manner, head on, to the maximum extent possible.

## III. <u>Arson Information Management Systems (AIMS): Their</u> Role in Arson Prevention and Investigation

As noted above, economic, social, and personal stress situations strongly affect the condition of moral hazard with respect to potential arsonists--whatever their motive. Therefore, for arson <u>prevention</u> purposes it would be ideal if one were able to identify three categories of information, each with its own special predictive capabilities to offer:

Environment-based information, to focus on the impact of economic conditions on different business sectors (e.g., restaurants, home building, furniture, etc.) or residential housing conditions (outmigration, gentrification, etc.).

- <u>Premises-based</u> information, to focus on various types of buildings (e.g., schools, single-family and multi-family housing, etc.) that are probable arson targets.
- <u>Perpetrator-based</u> information, to focus on individuals whose moral hazard condition indicates that they would likely commit (or <u>cause</u> to be committed) an act of arson.

Each of the seven Arson Information Management Systems (AIMS) that have received support from the U.S. Fire

Administration addresses one or more of the above information modes. Most of the projects primarily address the arson-for-profit motive due to the presence of readily identifiable prior warning signs and the generally rational state of mind of the typical perpetrator. Certain AIMS programs are preventive in nature, and seek to identify financial stress and other causal factors early enough for official intervention to prevent (hopefully) an individual from committing an arson, or a premises from being "torched." Other AIMS programs deal with post-arson information from multiple prior fires and involving multiple individuals, with the objective of determining whether people working together, possibly in a conspiratorial relationship, have set or arranged incendiary fires.

The government executive who wants to adapt an AIMS program to the requirements of a local arson problem, or to combine features of various systems into a local "hybrid" AIMS program, needs to ponder some critical issues. It is important to note and briefly discuss these issues here, in order that the government executive will be able to preside over the design or adaptation of a realistic and effective AIMS program. The considerations are as follows:

> The preventive value of any replicated AIMS program in your own jurisdiction is a function of the regularity with which potential arsonists in your jurisdiction share characteristics with those in the AIMS city whose model you are emulating. Conditions influencing arson behavior can vary dramatically from one locality to another because of different economic, population, and social factors. Therefore, it is important to proceed carefully when considering the applicability of any of the seven AIMS programs--alone or in combination--to your jurisdiction. For this reason, it is very important to invest considerable time and resources in reviewing your local arson problem--in terms of the perpetrators, premises, and environmental situations involved.

- Most AIMS programs deal almost exclusively with (a) multi-family and (b) residential structures, and with (c) arson-for-profit. A minority of the programs also involve commercial premises or motives other than arson-for-profit. It is important, therefore, for your agency heads and their staffs to first determine the particular complexion of the arson problem you have, in order to select the most suitable AIMS program or program component(s) for your jurisdiction.
- In order to prevent and control the problem of revenge-motivated arson, with which no AIMS program specifically deals, it may be necessary to develop a separate prevention program. The particular data requirements, resource commitments, and related issues concerning revenge arsons are discussed in Chapter 5 of this Executive Guide.

## IV. The Role of the Government Executive: Coordination and Central Direction

na na parante da serie de la construcción de la construcción de la construction de la construcción de la constr Discussions of arson prevention and control programs typically center on fire, police, and occasionally prosecutive officials. Rarely do discussions of arson programs contain mention of a central role played by mayors, city managers, or county executives. The reason for this is that arson is typically viewed, as noted above, as a criminal justice problem with so many technical (legal and investigative) wrinkles that the law enforcement experts best know how to handle them. Some of the most noteworthy and progressive innovations in arson control have been cooperative law enforcement policymaking bodies (arson task forces) and operational enforcement units (arson strike forces). However, the requirements of a comprehensive arson prevention and control program contain so many components, from such a diverse mix of public agencies, business groups, and civic and neighborhood organizations, that criminal justice officials would in most cases be incapable of effectively coordinating and integrating all of the components. For this reason, where the local objective is arson prevention and control through early intervention, it is

important to move the central locus of strategy planning to the office of thetgovernment executive.

The City of New Haven offers some valuable insights into the progress that a local jurisdiction can make in combatting arson both preventive and reactively when the executive (in this case the former mayor, Frank Logue) decides to take charge. In 1975, a local investigative grand jury report inquiring into landlord and speculator-led arson-for-profit roundly criticized the local authorities for a lack of adequate arson investigation and training. In response, a municipal interagency task force was set up with the Mayor's Chief Administrative Officer -- a sort of deputy mayor in charge of administration -- as the coordinator. The task force recommended creation of a joint police-fire department arson squad, arson training for fire and police investigators, and development of a fire and arson information system. Each recommendation was والأجنبة والاستاجة فأرامه وأستجو أستراد موته implemented.

New Haven is an important example of what a jurisdiction can achieve if virtually every important "actor" in the local government process makes and then keeps a commitment to participate and contribute. Not only were police and fire investigators successful in pursuing investigations cooperatively, but New Haven initiated a number of neighborhood stabilization and housing rehabilitation programs--in part to address problems of urban blight, but to combat arson there as well. Significant factors in New Haven's arson control. experience were the informed and sustained leadership from city hall through the Mayor and his Chief Administrative Officer, as well as important early and continuing involvement from the Mayor's Office of Policy Analysis, an internal "think tank" unit with the responsibility for researching policy, agency coordination, funding, and other issues of innovation.

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Furthermore, the executive level of direction of the New Haven effort (emanating from city hall and centrally involving the police and fire chiefs) heightened general interest over arson in New Haven. This interest was especially reflected in extensive and probing media coverage of the local arson problem. By keeping the arson issue frequently before the citizens, it is possible to create the perception that arson is being fought in a community, vigorously and successfully, and that perpetrators stand to be caught and punished. As in many other instances, the perception of effectiveness thus generated can create the reality of effectiveness.

A good example of the central role that the media can play as a backdrop to local anti-arson efforts is that of Seattle. Arson became a citywide issue there in 1975, but in contrast to the grand jury exposé that touched off the New Haven arson program, Seattle's effort emerged as the pet project of the new fire chief, Frank Hanson, who simply chose the topic because he believed it to be an issue. Partly in response to a municipal budgetary proposal to cut back the size of the fire department arson unit, Hanson led the department in developing a citywide arson program to improve investigation. He centrally involved the local insurance industry, and broadcast the firm message that anyone who commits an act of arson in Seattle would be caught.

The central role played by the media in Seattle, especially through fire department cultivation of the newspaper and television media, is an instructive example of how local officials can get the arson message to concerned citizens and potential arsonists alike. Virtually all arson stories in Seattle were extensively covered, aided in part by a special fire department effort to provide the media access to normally restricted fire scenes. Arson arrests were fully and vividly covered, and the fire department made periodic announcements

about anti-arson program activities, training programs, and other plans--all of which were presented as (and therefore constituted) "events" from a media point of view. This approach encouraged not only widespread news coverage, but encouraged substantial competition between and among the local media organs for the most "in depth" and incisive news coverage.

One result associated with this substantial media campaign was a drastic dip in arson fires during the first year of the city's program--despite the fact of very little change in the Seattle conviction rate for arson. Therefore, it may be assumed that in Seattle, as in the generally parallel case of New Haven, local authorities utilized executive resources of leadership, cooperation, and coordination to communicate a sense of vitality and drive in their local arson program. They also broadcast another message: an absolute intolerance for arson acts. This is accomplished by signalling to potential firesetters their situation of increased jeopardy should they set a fire.

In sum, it is important to reflect on the noteworthy experience of Seattle and New Haven, for it demonstrates that time and energy wisely invested by government executives in a <u>total</u> anti-arson mobilization hold enormous deterrent potential. Morale of individual enforcement personnel is boosted by the increased value placed upon their work, and this in part is aided by sharp rises in expectations placed upon such personnel. When additional resources are presented to these agencies in the form of manpower, training, and perhaps specialized equipment to meet the challenge posed by the heightened expectations, results appear to be directly forthcoming. Where city officials--whether mayors or police or fire chiefs--encourage arson coverage by the local news media, this factor appears to increase substantially the results of a local program.

16

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## CHAPTER 2

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# ECONOMIC FACTORS: ARSON, HOUSING, AND \_ NEIGHBORHOOD STABILIZATION

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## Table of Contents

Page

II.	Additional Technical Resources: Housing Economics, Fire and Arson Incidence, and Neighborhood Stabilization	45		
I.	Additional References	43		
APPEN	IDICES			
ENDNOTES Note that the state of the				
IV.	Private Sector Involvement in Arson Prevention	37		
III.	Government Regulatory and Subsidy Programs, and Arson	34		
	B. Housing Variables, Residential Fires, and Arson	31		
	A. Economics of the Inner-city Housing Market	26		
II.	. Housing Market Conditions and Arson			
I.	Understanding the Relationship Between Fires and Arson	25		

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### CHAPTER 2

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ECONOMIC FACTORS: ARSON, HOUSING, AND NEIGHBORHOOD STABILIZATION

## I. Understanding the Relationship Between Fires and Arson

Fires in residential occupancies accounted for about 67 percent of all structural fires in the United States in 1978.<sup>1</sup> This accounted for roughly 48 percent of total dollar loss from all fires in that year, or approximately \$1.9 billion.

The National Fire Data Center of the U.S. Fire Administration studied the causes of reported residential fires for two separate years in two states, California and Ohio. Although the results may not be fully representative of the entire nation, they do suggest the significance of arson as an important contributor to this dollar loss. Their study showed that the "Incendiary/Suspicious" category accounted for 16 percent of the total dollar loss. "Unknown" causes accounted for another 19 percent. If one assumes that roughly half the "unknown" fires are really arson fires, these figures if extrapolated nationwide suggest that residential arson alone resulted in direct total dollar loss of approximately \$500 million in 1978.

The economic cost of arson goes beyond the direct dollar loss from the fire. Chester Rapkin of Princeton University's Fire Research Program has suggested that indirect costs such as increased future insurance premiums for fire coverage, expenditures for public fire protection, federal fire related expenses, the costs of household fire protection equipment, and expenditures for private fire protection activities can add substantially to the direct dollar loss cost of arson.<sup>2</sup> In

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addition, a recent study by Munson and Ohls addressed the issue of social costs resulting from residential arson fires.<sup>3</sup> Their 1978 sample study indicated that approximately one-fourth of residential fires resulted in additional social costs for temporary shelter, medical care, missed work, and other items. The authors estimated these costs at between \$220 million and \$323 million annually, of which roughly half were borne by members of the households who suffered the fires.

26

The non-economic costs related to the loss of human life, physical disability and suffering resulting from residential arson fires are difficult to quantify, but impossible to ignore. The National Safety Council estimated that 5,100 persons, or 81 percent of all fire fatalities, perished in residential fires in 1978.<sup>4</sup> The number of serious injuries attributable to residential fires is probably close to 100,000 annually. Although the percentage of deaths and serious injuries resulting specifically from arson is not known, it appears fair to assume that the incidence at least equals arson's percentage share of the total reported fires nationwide (i.e., greater than 25 percent).

#### II. Housing Market Conditions and Arson

The following discussion focuses on inner-city housing market conditions as factors in creating the conditions that foster arson. The first section discusses general economic problems in the inner-city housing market. The second section examines the relationship of certain housing variables to residential arson.

# A. The Economics of the Inner-city Housing Market

Within the past decade, media exposés have attracted nationwide attention to residential arson problems in the

inner-city through such examples as New York's South Bronx, Boston's Symphony Road, and Chicago's Woodlawn neighborhood. The individual arson problems can be traced, at least in part, to conditions of deterioration of the inner-city housing stock.

Several interrelated factors have been cited to explain the frequent economic demise of inner-city housing. On the "demand" side, Moore, Livermore, and Galland have referred to "a cycle of abandonment" to explain the deterioration of housing in the Woodlawn area.<sup>5</sup> They suggest that the earlier twentieth-century migration of blacks from the rural South to the urban centers of the North and East has not been followed by a newer wave of immigration. According to these researchers, older communities such as Woodlawn are steadily losing population as better housing becomes available in other parts of the city. The result is a community largely inhabited by residents at the lower socio-economic level with whose growing prevalence the authors associate (but not in a causal relationship) neighborhood housing decline.

There are several explanations given for this phenomenon of "outmigration." They include: (1) changes in the housing preferences of the present inner-city dwellers; (2) a desire to improve one's surrounding environment in relation to factors such as schooling and crime incidence; (3) the availability of more housing alternatives in non-inner-city areas; and (4) rising income among certain inner-city dwellers which makes alternative housing choices affordable. Whatever the reason(s) may be within a given community, Stegman concludes that "a strong concensus exists among housing experts that neighborhood [housing] decline is associated with change in occupancy from one socioeconomic group to another."<sup>6</sup>

This reduction in demand for inner-city housing has implications for "supply side" variables. The housing surplus

caused by the decease in demand places the present owners (whether residents or absentees) in a difficult economic Those owners wishing to sell property find that the position. market resale value has diminished as the number of potential investors for buyers declines. Owners of rental property are faced with the problem of increased vacancies. The question then becomes whether to raise rents (regulations permitting) in order to cover the loss of income resulting from the increased vacancies, or to lower rents in order to induce tenants living in other housing to move to the new buyer's property. The former option may lead to additional vacancies which can ultimately result in the complete abandonment of a building. Stegman's study of the inner-city Baltimore area showed that substantial numbers of abandonments were due to the vandalizing of vacant apartments awaiting occupancy by new tenants. Abandonments, in turn, have negative effects on the quality of remaining housing by reducing the resale value of that property. This, in turn, discourages potential investors and reduces the incentive of remaining owners to maintain their property. This ultimately can lead to a cycle of further vandalism and abandonment. The snowballing effect leads to the eventual deterioration of entire neighborhoods.

The second option available to the owner, of lowering rents to attract new tenants, also has some drawbacks. Owners are reluctant to lower rents because they are afraid of attracting less dependable tenants. These "undesirable" tenants can translate into greater maintenance costs, as wear and tear on the property increases. In addition, present tenants are less likely to remain at a given location if they feel their surrounding environment is adversely affected by the influx of less desirable neighbors. Turnover is likely to increase, thereby creating a condition which brings additional expenses to the owner. Vacancies may ultimately occur (despite the lower rental prices), which means the problem of

abandonment, discussed above, very likely will begin to plague the neighborhood.

Other options are available to the owner who faces these problems. One common alternative is to reduce operating costs drastically in order to maximize the owner's short-term profit and cash flow situations. Maintenance costs and real estate taxes are usually the most significant expense categories on any owner's income statement, so the owner may decide to eliminate maintenance expenditures and/or not pay the taxes. Of course, reduced maintenance leads to a deterioration in housing quality, which leads to further vacancies and abandonment. Outside assistance, such as government supported subsidy, loan, and rehabilitation programs, is another option. Sternlieb's study of Newark, however, indicated that a majority of the resident tenement landlords he studied did not know about many of the government programs designed to provide financial assistance. As Sternlieb pointed out, "[S]mall owners, frequently those with the least access to private financing, are least aware of potential government aid."7

Stegman also pointed out that abandonment per se may not be detrimental to the housing market. If the most dilapidated structures are abandoned, this could merely reflect that the supply of housing is being reduced to coincide with reduced demand, with the prospect that the average quality of housing may be improved in the process. Unfortunately, however, Stegman's study showed that a large portion of abandoned property consisted of sound structures which were of much better quality than many of the remaining buildings. Stegman attributed this to the indiscriminate nature of vandalism (not necessarily arson) and its subsequent negative affects on remaining owners and residents. The risky financial nature of obtaining any capital gain on an inner-city housing investment, and the problems involved in maintaining a positive cash flow from such an investment, help explain the disincentives to invest in inner-city property. Earlier, it was pointed out that a reduction in maintenance expenses is a frequent option chosen by owners. Sternlieb has observed that due to ignorance, many owners see property improvements as leading to a certain increase in real estate taxes. The owners he interviewed knew very little about the city's definition of "assessable improvements" and this uncertainty about the tax implications of improvements inhibited their prospective role in improving the local housing stock.

In addition to the uncertainty of the return an investor can expect from inner-city property, there is the problem of obtaining conventional financing. Sternlieb's study indicated that most of the transactions involving slum tenements were financed by unconventional (e.g., "purchase money") mortgages. The availability of conventional, long-term financing has decreased as the deterioration of the inner-city housing market has proportionately increased. The new investor in this market typically enters into a short-term mortgage agreement, which entails significantly higher repayment installments and, thus, a much tighter cash flow squeeze for the short term.

Finally, many problems which plague inner-city housing can be attributed to inefficient or poor property management on the part of the owners. Stegman emphasized this point, and he has stressed the need for better management skills on the part of owners. Apparently, the lack of management skills can turn a solvable financial situation into an unsolvable problem.

## B. Housing Variables, Residential Fires, and Arson

Several recent studies address the relationship between the inner-city housing market conditions, discussed above, and the incidence of residential arson.

The arson problems cited in these studies are most likely the result of the acts of vandals or profit-seekers. Abandoned or deteriorated buildings become prime targets for vandals. Profit from an arson fire can be obtained in several ways. Insurance proceeds can be fraudulently obtained, a worthless building can be demolished at no cost making land available for more profitable (e.g., redevelopment) ventures, or an arson fire may simply be a means for an owner to prevent further operating losses.

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Munson and Oates studied the incidence of building fires (not necessarily arson fires) in a large sample of U.S. cities of various size.<sup>8</sup> They compared the incidence of fires per 1,000 persons with a number of social and economic "community characteristics." Their results showed that the incidence of fire was:

- Negatively correlated with the income of communities.
- Negatively correlated with the proportion of owner-occupied dwellings.
- Positively correlated with the degree of crowding.
- Positively correlated with the degree of disrepair of the housing.

Although the dependent variable in this study was not arson fires, but fires per se, the study suggests that the relative seriousness of the residential fire problem is correlated with the relative economic vitality of the city and

the characteristics, including economic and social stress, of its population. In a related study, Munson focused on residential fire incidence in Charlotte, North Carolina.<sup>9</sup> He concluded that different neighborhoods within a city experience different types of fires. Thus, fire protection strategies and programs should be designed to meet the differing needs of those neighborhoods. The implication for arson prevention and control is that particular areas within a city may require a more intensive anti-arson program because of the characteristics of that area. (For more information on options for more intensive programs, see Chapter 3 on Arson Information Management Systems.)

Hall and Karter also examined fire rates and community characteristics on an inter-city and intra-city basis.<sup>10</sup> Their intra-city statistical regression analysis demonstrated that community characteristics had varying strengths in explaining fire rates. Although housing variables were not among the three "strongest" variables, two of the variables were included in the "moderately strong" category for explaining variations in fire rates. The two were <u>crowdedness</u> (the percentage of year-round housing units with 1.01 or more persons per room) and <u>ownership</u> (the percentage of year-round housing units that are owner-occupied); the former being positively correlated with fire rates and the latter being negatively correlated.

Hall and Karter found that "two variables--<u>vacancy</u> (percent of year-round housing units that are vacant) and <u>age</u> <u>of structure</u> (percent of year-round housing units in structures built before 1940)--varied widely in their explanatory strength from community to community."<sup>11</sup> For the most part, the variables showed "moderate strength" in explaining fire rate variations but it depended on the community studied. Of the "weak" variables, <u>size of structure</u> (percent of year-round housing units in one-unit structures) explained little of the variation in fire rates.

The correlation between abandonment and fire incidence was examined by Sternlieb and Burchell in their study of Newark, New Jersey.<sup>12</sup> Their results showed that while the number of fires in Newark increased by 14 percent during a six-year period, the number of standing structures decreased by 4 percent. However, the number of <u>vacant</u> buildings tripled and the number of fires in those buildings increased fivefold. The authors assumed that the contribution of arson to this increase was substantial, whether the arson motive was economic or behavioral.

The <u>1977 Boston Arson Report</u> by the Mayor's Office of Federal Assistance described the deterioration in housing conditions and the subsequent arson epidemic that occurred in one particular area of that city.<sup>13</sup> That description examined the role of speculators who bought property and then resold it to new and financially inexperienced homeowners. Many of these units were later foreclosed because of defaults on the mortgages. Abandonment became rampant and abandoned buildings quickly became targets of arson.

Another study, by Richard Syron, of fire loss in Boston during a three-year period in the mid-60's showed that "percent non-white" and "percent of housing units vacant" were the strongest variables in explaining the variation in fire loss among various Boston census wards.<sup>14</sup> A more recent study in the Boston area has been undertaken as part of the Urban Educational System's development of an Arson Early Warning System. The preliminary results of their arson prediction model indicate that several "economic stress" variables are highly correlated with the incidence of arson. The housing variables cited in their work include:

Vacancy rate

- Building code violations
- Sanitary code violations
- Rent control records
- Time lag between building citations and the repair work done concerning those citations.<sup>15</sup>

Another arson early warning project has been undertaken in New Haven, Connecticut. Through the use of a regression model, the New Haven staff isolated four "trigger" variables which explained or accounted for 78 percent of the variance in arson incidence between the arson sample and a control group.<sup>16</sup> One of those variables is the number of housing code violations issued by the New Haven Housing Conservation and Code Enforcement Agency.

This section has highlighted several studies that tend to show a relationship between fire incidence and various housing and economic variables. The studies focusing on arson incidence specifically lend support to the argument that such variables as abandoned buildings, disrepair of housing units, and vacancy rates are key indicators of economic stress burdening a neighborhood's housing stock, thereby increasing its potentiality for falling victim to arson.

## III. <u>Government Regulatory and Subsidy</u> <u>Programs, and Arson</u>

An examination of all the federal housing grant, loan, and other programs and their relationship to arson is beyond the scope of this effort. However, a brief review of several of the more pertinent programs should be included in a discussion of the arson problem.

The FAIR (Fair Access to Insurance Requirements) plan is a federally sanctioned pool for high risk insurance

policyholders. It is intended to provide essential property coverages primarily for urban area residents who might have trouble obtaining such coverages in the voluntary markets.<sup>17</sup> One purpose of the FAIR plan is to arrest the deterioration of urban core neighborhoods due to the unavailability of property insurance coverage by private carriers. Although federal guidelines have been enacted to establish a baseline framework for the states, each of the 27 states having a FAIR plan is responsible for the operation of its own program.

The FAIR plan program has come under sharp criticism for allegedly promoting arson-for-profit by making insurance available to high risk clients such as professional arsonists. A GAO (General Accounting Office) report in May 1978 concluded that certain FAIR plans were easy targets for arson fraud and that FIA (Federal Insurance Administration) regulations could and should be revised to tighten FAIR plan coverage. 18 FIA administrator Gloria Jimenez defended the FAIR plan at a Congressional hearing on the subject, <sup>19</sup> where she suggested that criticism of the FAIR plan should instead be leveled at the entire insurance industry. A number of remedial programs are underway, designed in part to tighten the underwriting discretion available to state FAIR plan administrators, and to commit funds for the civil investigation and litigation of allegedly fraudulent claims. It is important to note that many of these reforms have been proposed by the National Committee on Property Insurance (NCPI), the national FAIR plan trade association.

For information on NCPI-arson programs, including its 1981 Anti-Arson Action Plan, contact:

> Eugene LeComte, President National Committee on Property Insurance 55 Court Street Boston, MA 02108 (617) 367-5912

Another government program that seems to have an effect on residential arson is the effort to enforce building and health codes. This "program" is actually a series of individual state and local inspection and code enforcement activities that vary from jurisdiction to jurisdiction. A recent report on arson prevention suggested three purposes for such inspections:<sup>20</sup>

- To reduce potential damage from an arson fire and increase the likelihood of detecting arson evidence by requiring installation of fire detection and extinguishing equipment.
- To identify buildings that have lost their economic viability and therefore are prime targets for arson fires.
- 3. To mandate upgrading of a building, thus increasing the owner's investment in the property and reducing his incentive to commit arson.

It can be argued that if code enforcement is rigorously and indiscriminately applied, it can promote arson by drastically increasing the owner's expense (and possible financial loss) to maintain that property. For reasons such as this, jurisdictions like New York City have proposed combining their anti-arson inspection program with an incentive-oriented system designed to make the landlord aware of government grant, loan, and other financial support to upgrade his property. This is accomplished by matching up the landlord with a grant or loan program for which he qualifies, and which would help remove the financial pressure creating the potential arson hazard. Thus, the "carrot" approach (inducement) is mixed with the punitive "stick" approach. For further information about this program, supported by the Aetna Life and Casualty Company, contact:

> Landlord Contact Program Arson Strike Force 51 Chambers Street, 5th Floor New York, NY 10007

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Demolition programs have been adopted by several municipalities, such as Phoenix, to prevent arson-for-profit and arson by vandals. An empty lot may not increase the market resale value of surrounding property, but it is arguably better than having a building that encourages an arson fire resulting in the possible loss of neighbors' lives or fraudulent profits for its owner. However, demolition programs can be expensive, and in large cities the backlog of demolition-targeted buildings, due to protracted legal battles, can be substantial.

## IV. Private Sector Involvement in Arson Prevention

The most important involvement of the private sector in the residential arson problem lies in insurance practices and mortgage financing. These two areas are interrelated in that most mortgage loan arrangements require that the property serving as collateral be insured. Both insurance companies and financial institutions have come under fire recently for alleged "redlining" practices and for the perceived consequences that such practices have on the further deterioration of neighborhoods.

The unavailability of private carrier property insurance was the primary reason for federal encouragement of the FAIR plan program. However, Syron has pointed out that FAIR plans encourage insurance companies to pass along their high risk applicants to state FAIR plans, since FAIR losses are frequently shared by participating companies.<sup>21</sup>

Like insurance coverage for inner-city property, providing mortgage financing in those areas is a risky venture for financial institutions. In describing the apparent dilemma facing insurance companies, Lewis stated:

[C] ompanies are expected to aid in the revitalization of blighted portions of central cities . . . and at

the same time these companies have a responsibility to pursue business practices that protect their solvency and earning capacity.<sup>22</sup>

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This statement also applies to banks and other financial institutions. Cooperative efforts to provide financing for inner-city programs have been undertaken recently, with promising objectives and considerable levels of resource commitment.

A number of recent programs have been initiated to bridge the gap between public and private sector commitment to neighborhood revitalization in general, and urban arson which threatens such revitalization efforts in particular. The Neighborhood Reinvestment Corporation (NRC) was created in 1978 by the U.S. Congress as one component of the Housing and Community Development Amendments of 1978. A principle activity of NRC consists of Neighborhood Housing Services (NHS) programs that are designed to improve the quality of local housing, thereby stabilizing neighborhoods. NRC and Neighborhood Housing Services' efforts are important for local arson control because they focus on whole neighborhoods (residential and commercial) and are not limited to individual housing units or businesses. Neighborhood Housing Services provides assistance on such issues as building rehabilitation counseling, financial counseling, and construction monitoring. NHS operates programs in over fifty U.S. cities, and many of those individual programs contain anti-arson components. For further information, contact a local NHS office, or:

> William Whiteside, Director Neighborhood Reinvestment Corporation 1700 G Street, N.W., Sixth Floor Washington, D.C. 20552 (202) 377-6362

The Local Initiatives Support Corporation (LISC) was created in 1979 as a Ford Foundation effort coupled with support from six major insurance companies and banking firms. LISC is a nonprofit enterprise that helps local organizations attract public and private resources in the campaign to revitalize neighborhoods. LISC has provided technical assistance to local groups in the development of funding proposals, has furnished financial support in order to "leverage" larger investments from lending institutions in the local communites, and aids community groups in securing loans and grants from government agencies. In 1981, LISC undertook a program in the northwest area of the Bronx, New York, in part to help arrest the spread of residential and commercial arson there. For further information on LISC and its arson prevention and control emphasis, contact:

Anita Miller, Project Director Local Initiatives Support Corporation 666 Third Avenue New York, NY 10016 (212) 949-8560

While there are no definitive studies on the relationship between housing economic conditions and arson, a number of organizations have begun to specialize in the early identification of neighborhood decline and its relationship to the onset of patterns of arson. One group located in Boston has received USFA, Law Enforcement Assistance Administration (LEAA), and ACTION funds to provide technical assistance regarding neighborhood and housing arson prevention activities. For further information on assistance, contact:

> David Scondras, President Urban Educational Systems 153 Milk Street, Room 530 Boston, MA 02109 (617) 482-4477

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Urban Educational Systems has also developed a prototype Arson Early Warning System (AEWS) in Boston; a program which is discussed in Chapter 3 on Arson Information Management Systems (AIMS).

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#### Appendix II

#### Additional Technical Resources: Housing Economics, Fire and Arson Incidence, and Neighborhood Stabilization

#### Resource

Gelvin Stevenson Economics Associate Editor Business Week Magazine 1221 Avenue of the Americas New York, NY 10020 (212) 997-2286

Alfred Lima Consulting Research, Inc. 10 Concord Avenue Cambridge, MA 02138 (617) 547-3314

Mark Zanger, Editor Real Paper 929 Massachusetts Avenue Cambridge, MA 02139 (617) 492-1650

Prof. Michael Stone Department of Community Planning University of Massachusetts Boston, MA 02125 (617) 287-1900, ext. 325

Dr. Costis Toregas Vice-President Public Technology, Inc. 1301 Pennsylvania Avenue, N.W. Washington, D.C. 20004 (202) 626-2400

Professor Chester Rapkin School of Architecture and Urban Planning Princeton University Princeton, NJ 08544 (609) 452-3734

Professor Robert Hershbarger Department of Finance School of Business University of Missouri-Columbia 228 Middlebush Columbia, MO 65201 (314) 882-6272 Speciality

Urban Housing Economics

Urban Housing Economics; Arson and Casualty Reinsurance

Neighborhood Arson Analysis; Redevelopment, Gentrification, and Condominium Conversion Arson

> Neighborhood Revitalization

Urban Property Insurance, and Mortgage and Insurance Redlining

Housing Abandonment

National and Local Economic Stress Indicators

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## CHAPTER 3

# ARSON INFORMATION MANAGEMENT SYSTEMS:

by

Mary V. McGuire Research Scientist

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# Table of Contents

I.	Intro	oduction	53
	Α.	What Is an AIMS Program?	54
	в.	What Are the Purposes of an AIMS Program?	54
	c.	How Do the AIMS Programs Work?	55
	D.	Who Is Involved in the AIMS Programs?	55
•	E.	Who Are the Beneficiaries of AIMS Programs?	56
	F.	Summary	57
II.	New Y	fork City's Arson Strike Force	59
	Å.	Arson Analysis and Prevention Project	60
		<ol> <li>Arson Incidence Analysis</li> </ol>	60
		2. Computerization of Fire Marshal Reports	60
		3. Arson Risk Prediction Index (ARPI)	61
		4. Arson Arrest and Case Tracking System	63
	в.	Arson-for-Profit Information Center	6 3
	c.	Community Outreach	64
	D.	Resources Required	66
		1. Personnel	66
		2. Equipment and Software	66
		3. Data Sources	66
III.	New H	laven's Arson Warning and Prevention Strategy	68
	Α.	The Arson Warning and Prevention Strategy	69
	в.	Resources Required	72
		1. Personnel	72
		2. Equipment and Software	. 73
		3. Data Sources	73
IV.	Knoxv	ille AIMS Project	74
	Α.	Case Management	7 <u>6</u>
	в.	Pattern Analysis	76
	с.	Data Display and Mapping	77
	D.	Resources Required	78

Preceding page blank

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			Page
		1. Personnel	7.8
		2. Equipment and Software	78
		3. Data	79
v.	Phoen	ix Fire Department AIMS Program	79
	Α.	Arson-Related Information Files	80
		1. Fire Incident File	80
		2. Insurance Claim File	81
		3. Occupancy Inspection Control File	. 81
	в.	Resources Required	82
		1. Personnel	82
	,	2. Equipment and Software	83
	4	3. Data Sources	<b>83</b> -
VI.	San F for-P	rancisco Early Warning System and Arson- rofit Study Program	83
	Α.	EWS Research Activities	85
	в.	Resources Required	87
		1. Personnel	87
		2. Equipment and Software	. 87
		3. Data Sources	87
VII.	Bosto	n AIMS Project	88
	Α.	Arson Early Warning System	89
	в.	Technical Assistance	92
	с.	Resources Required	93
		1. Personnel	93
		2. Equipment and Software	93
		3. Data Sources	93
VIII.	Seatt	le AIMS Project	94
	Α.	Historical Study of Determinants of Arson in Seattle Neighborhoods	95
	в.	Absolute Predictive Model	96
	с.	Resources Required	96
		1. Personnel	96
		2. Equipment and Software	97
		3. Data Sources	97

50<sup>°</sup>

## APPENDICES

Ι.	AIMS	Program Contact Persons	99
II.	Supplementary Technical Information		
	A.	New York City Arson Strike Force (ASF)	101
	в.	New Haven Arson Warning and Prevention Strategy (AWPS)	103
	c.	Knoxville AIMS Project	107
	D.	Phoenix Fire Department AIMS Program	109
	Ε.	San Francisco Early Warning System and Arson-for-Profit Study Program	111
	F.	Boston AIMS Project	113
	, G.	Seattle AIMS Project	115

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#### CHAPTER 3

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## ARSON INFORMATION MANAGEMENT SYSTEMS: A TECHNICAL REPORT

#### I. <u>Introduction</u>

During the past several years, the United States Fire Administration has funded programs in seven cities for the development of Arson Information Management Systems (AIMS). These programs vary dramatically from city to city, reflecting differing arson problems, in some cases, and different approaches to similar problems in other cases. The programs have taken preventive, reactive, or mixed approaches to arson problems. While each of these programs could be called a "model program," it is very unlikely that any one "model" could be transferred without modification or adjustment to a new jurisdiction. Common sense and experience suggest that no two cities are alike, and arson, housing, and economic problems of one city are not identical to those of another city. Nevertheless, important lessons can be learned from the study of these jurisdictions' efforts and approaches to solving their arson problems. In some situations, the work conducted within these jurisdictions may be used directly, without repeating or duplicating their efforts. In other situations, errors or pitfalls may be avoided by heeding the experience of these AIMS cities. But perhaps most important, examination of the seven AIMS programs can assist a jurisdiction in articulating its arson-related problems and needs, as well as in defining the most appropriate arson prevention and control strategy for that jurisdiction.

This report provides an introduction to Arson Information Management Systems and describes the seven AIMS programs Currently operating in the United States. The information

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presented in this report was collected during site visits to the seven AIMS program cities, through numerous conversations with program managers and staff, and from reports, publications, and memoranda prepared by program staff. Additionally, further technical information concerning each program was gathered by mailed questionnaires. This supplementary technical information is found in Appendix II. It is hoped that this report will aid interested individuals in designing and tailoring arson control programs to meet the needs of their jurisdictions.

54

#### A. What Is an AIMS Program?

An AIMS program, in practice, is a systematic attempt to understand, to control, and/or to predict arson in a (local) jurisdiction. AIMS programs involve the identification of arson-related information needs and the development of research or information management procedures to address those needs.

## B. What Are the Purposes of an AIMS Program?

An AIMS program can seek to understand the nature of an arson problem; to build a foundation for arson prediction or for more effective arson fire investigations; to prevent arson fires from occurring (a proactive, intervention program); to improve arson investigation capabilities (a reactive program); or to fulfill a combination of these purposes. The seven AIMS programs in operation now represent examples of all these purposes, either alone or in combination. For example, the Seattle AIMS seeks primarily to increase understanding of social and economic factors linked to fluctuation in arson fires in Seattle neighborhoods. The New Haven Arson Warning and Prevention Strategy (AWPS) operates primarily to predict and thus to prevent the occurrence of arson. The Phoenix AIMS program serves primarily to enhance investigation capabilities.

## C. How Do the AIMS Programs Work?

All of the AIMS have involved research of some sort, and the majority of AIMS have also been action programs--seeking to prevent arsons or to improve investigative capabilities.

The research, prevention systems, and mechanisms for improving investigations can be either manual or automated, depending upon the program's needs and purposes. Thus, for example, New Haven's prediction system is operating manually, but the research conducted to develop this system relied upon computerized data analyses; and, New Haven is automating its prediction system which will facilitate the investigative uses of the system.

#### D. Who Is Involved in the AIMS Programs?

AIMS programs can be designed and operated by public agencies or by private organizations. The type of agency or organization administering an AIMS program will depend upon the particular needs and goals of the AIMS program. A program that is primarily research-oriented, such as Seattle's, can be effectively run by a private organization. However, when program goals encompass facilitating or improving investigative capabilities, an AIMS program is likely to be most effective when operated from within the fire department, as it is in Phoenix. When an arson control program is intended to be multi-faceted (i.e., to sustain preventive and reactive components), the most appropriate affiliation may be the municipal executive's office, as is the case in New York. This provides the program greater opportunities for coordinating the efforts of different city agencies and departments than might be the case if the program were affiliated with a single department.

## E. Who Are the Beneficiaries of AIMS Programs?

Again, the preventive or reactive focus of each AIMS program dictates, at least to some extent, who will benefit from the program. In general, programs seeking to predict and prevent arson take economically motivated arsons (arson-for-profit) as the program target, at least as a starting point. Economically motivated arson is currently more easily predicted than, for example, arson motivated by revenge. A successful prediction and prevention system dealing with arson-for-profit serves a wide range of beneficiaries, including government agencies, insurance companies, property holders, and present and future tenants of buildings prone to arson. As arson is prevented, or the arson rate reduced, taxpayers' costs are likely to be reduced. Thus, fire departments and their constituencies benefit from such programs.

56

AIMS programs seeking to enhance investigative capabilities benefit a similar range of parties. To the extent that these programs are effective in increasing the ability to detect and investigate arsons, they may lead to the arrest and conviction

of arsonists, thereby reducing the rate of arson and benefitting the parties that also benefit from prevention Programs (see above). If economic arsons are uncovered and successfully investigated, insurance companies may also benefit and, as the company's loss payments decline insurance premiums also drop--benefitting the policyholder. Naturally, fire departments, police departments, and the citizens they serve also benefit from improved investigative capabilities.

Programs designed to further a general understanding of arson trends in their jurisdictions primarily benefit urban planners and city agencies or employees faced with the task of planning present and future resource allocations within their jurisdiction. Indirectly, these programs may also benefit a
variety of other parties through informed, sensible planning efforts that result in more effective resource management and reduced costs and waste in local agencies and departments. Thus, not only the local government, fire and police departments, but also taxpayers can benefit from such programs.

### F. Summary

Arson Information Management Systems include a broad range of programs designed to understand, predict, and/or control arson. The programs include research components, and are often action/intervention programs as well, drawing upon computerized or manual procedures for data collection and analysis. The programs can be operated by public agencies or private groups, and benefit a variety of agencies and organizations.

This brief introduction to AIMS programs points to the diversity of AIMS efforts. The following sections describe the seven AIMS programs in some detail, and also emphasize their diversity of approach and output. However, all of the programs are concerned with arson control problems, with identification of arson-related information needs, and with the development of research or information management programs to address those needs. Each section, below, describes the process of identifying, defining, and solving arson information problems in a different city, and closes with a discussion of the resources required by that city's AIMS program. Table 1 provides an overview of the AIMS programs by summarizing the programs on four dimensions: the type of system utilized; the system's functions, uses of information generated or stored by the system, and the type of property on which the system focuses. Following Table 1, below, New York's comprehensive arson analysis and control program is discussed first. This is followed by discussions of the information management and arson prediction systems established by or in conjunction with fire

	[				Uses of		Primary	
•	Type of System		System Functions		Information		Target Property	
•	Automated	Manua 1	Analytical or Statistical	Information Storage and Retrieval	Predictive (Preventive)	Reactive (Investigative)	Residential	Commercial
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	x		x		X		x	

### AIMS PROGRAMS: TYPES OF SYSTEMS, INFORMATION, AND USES

TABLE I

New York

New llaven

Knoxville

Phoenix

San Francis

Boston

Seattle

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departments (New Haven, Knoxville, Phoenix, and San Francisco). Finally, the research programs (Boston and Seattle) aimed at understanding the economic and social determinants of arson are described.

### II. New York City's Arson Strike Force

New York City's AIMS project is part of a range of anti-arson programs developed by the city's Arson Strike Force The Arson Strike Force, a division of the Mayor's (ASF). Office, was created in August 1978 following a city council study of overall fire protection issues in New York. The ASF serves as a planning center and clearinghouse for arson-related programs and information, as well as a research group for the study of arson. Their initial task was to identify specific goals, problems, and information needs pertinent to New York City's arson problem. The process of problem-definition led to the establishment of a number of research and action programs dealing with arson or arson-related issues. These programs have differing objectives but are interrelated, share staff and information sources, and rely on overlapping methodologies. Considered together, the programs generate information that appears to be serving two functions equally well--arson prevention (proactive work) and arson investigation (reactive work).

The USFA/AIMS portion of the ASF's work is primarily concerned with community outreach for arson prevention. However, AIMS activities draw on the results of other Arson Strike Force projects and also generate information that can be used for investigative purposes. The goals and procedures of New York's AIMS program can be better understood in the context of the other anti-arson programs handled by the Arson Strike Force. These programs, their goals, and their central activities are outlined below.

## A. Arson Analysis and Prevention Project

The Arson Analysis and Prevention Project has four components: arson incidence analysis, computerization of Fire Marshal reports, arson risk prediction for buildings, and case tracking.

1. <u>Arson Incidence Analysis</u>. Each month the Arson Strike Force uses Fire Department incident reports to prepare a report that summarizes suspicious fires occurring in New York City. These typewritten "Arson Activity Reports" include the following information:

- Total number of arson fires in the city and each borough, and the percentage change in arson incidence over preceding months (in all structures and in occupied buildings).
  - The percentage of structural fires determined to be caused by arson in the city and each borough.
  - Those communities experiencing particularly numerous (i.e., more than 25) suspicious fires during the month.
  - Total number of suspicious fires in occupied and vacant structures, broken down by borough and community board.
  - Arson arrest and investigation information.

Arson Activity Reports are distributed to community groups, borough presidents, district attorneys, law enforcement agencies, and other interested parties. Arrest and investigation data are distributed only to law enforcement agencies and district attorneys.

2. <u>Computerization of Fire Marshal Reports</u>. The Arson Strike Force has completed coding and storing information from fire investigation reports from June 1977 to May 1979 in preparation for statistical analysis (see discussion of ARPI, the Arson Risk Prediction Index, below). This work has resulted in automated files of fire reports accessible by building address, owner name and address, date of fire, alarm box, and case number. In addition, ASF staff have established procedures for an ongoing automated record-keeping system in the Fire Department. Fire investigation data through December 1979 are currently available, allowing for rapid information retrieval.

3. <u>Arson Risk Prediction Index (ARPI)</u>. The goals of the ARPI component include the determination of building, owner, and neighborhood characteristics associated with arson fires, and identification of building and neighborhood indices for arson-risk prediction. Strike Force staff are establishing procedures for assigning ARPI scores to New York City property, based on key variables and data in city files.

The ARPI is being developed through statistical analysis of 9,542 buildings that experienced arson fires between June 1977 and May 1979; these buildings were identified by the automated fire incident reports described above. This sample of 9,542 buildings was compared to a control group of 12,223 buildings with no arson fire history, drawn from the assessor's files of city property. Strike Force staff compiled data on both sets of buildings from ten different (automated) files maintained by various city agencies. Included in the data collected was information on taxes and housing, including tax information, housing code violations, structural data, occupancy, and use patterns.

Preliminary analysis of economic and structural variables for 12,649 cases--9,445 control buildings and 3,204 buildings suffering arson fires--was completed in September 1980. While factor analyses identified several clusters of variables associated with arson incidence, discriminant analysis was used

to identify and order a set of variables that best predict arsons in New York. \* These predictor variables, listed in Table II, are weighted according to their relative importance and used to calculate an arson risk score for buildings in New York. Because the preliminary analyses focused on economic variables, Strike Force staff expect the arson risk scores calculated on the basis of these analyses to be most successful at predicting arson-for-profit, or economic arson, risks. Neighborhood-level characteristics and demographic data will be added to the index and tested during later stages of the project. Results of the preliminary Arson Risk Prediction analyses will be tested against late-1979 fire incident data for accuracy in predicting arson risk.

#### TABLE II

NEW YORK'S ARSON RISK PREDICTION INDEX: VARIABLES USED TO PREDICT ARSON RISK FOLLOWING PRELIMINARY ANALYSES والمراجع والمراجع والمراجع والمراجع

Building Type

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Building Location

Number of Ouarters in Tax Arrears

Occupancy Rate

Fire History

1- and 2-family houses; small walk-up apartments; large elevator apartments; non-residential

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corner location; borough location

number of recent fires; presence of suspicious fires

"Factor and discriminant analyses are discussed, along with programs that accomplish these statistical techniques in, e.g., N. H. Nie, C. H. Hull, J. G. Jenkins, K. Steinbrenner, and D. H. Bent, SPSS: Statistical Package for the Social Sciences, 2nd ed. (New York: McGraw Hill, 1975).

Under a separate program funded by the Aetna Life and Casualty Company, inspection and prevention programs will be designed for buildings identified as likely arson targets by the ARPI. Arson rates in test areas will be monitored for at least one year to evaluate the impact of these inspection and prevention programs.

Arson Arrest and Case Tracking System. The objectives 4. of this study include establishing more thorough, routine arson case data-gathering procedures and developing more objective city-wide strategies for conducting arson investigations and prosecutions. To these ends, ASF staff are working with New York's Criminal Justice Agency to establish a data base for historical analysis of arson arrests and prosecutions in New York City. Analyses are planned to determine how the justice system as a whole handles arson arrests and prosecutions, differences in practices between various law enforcement agencies and between boroughs, and profiles of individuals who are arrested and prosecuted. Accordingly, these analyses will examine final sentences and case dispositions, including reduction of charges and dismissals, and arrestee-related information.

Data from a pilot project which evaluated a police/fire arson patrol and investigation experiment in the Bronx from May 1978 to May 1979 resulted in Strike Force recommendations leading to a new division of Police and Fire Department arson investigation responsibility. The planned analysis of arson case dispositions is expected to generate further changes in policies and procedures which will affect law enforcement agencies concerned with arson.

B. Arson-for-Profit Information Center

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The Arson-for-Profit Information Center is the Strike Force's primary arson-for-profit control effort. This project

is designed to serve as an information resource for arson investigators and prosecutors, with project activities centering on two types of data collection. First, the information contained in automated city files is assembled, providing a description of the present owner, financial status, code violations, and structural characteristics of a building under post-fire investigation. Second, the project's Research Unit supplements this current information with manual searches of the city's property registry to collect information on former owners of the building, property transfers, mortgages, and liens. The project's Information Analysis Unit plans to combine the current building information with the historical data found in the city registry to establish an "Ownership-Link Data Base." This will aid in identifying links between parties with interests in property under investigation, wherever that is possible.

Current and historical information on buildings and owners is presently provided to investigators on request. A manual on research procedures prepared by the Arson-for-Profit Information Center has been used by law enforcement and community groups (see Appendix II). Arson-for-Profit Research staff plan to become involved in coordinating investigations performed by different enforcement agencies in the city. Additionally, application of risk-prediction indices following suspicious fires is planned to serve as a case-screening mechanism to assess investigative potential for law enforcement efforts.

# C. <u>Community</u> Outreach

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The AIMS portion of Strike Force programs draws on information generated by other anti-arson projects to increase public awareness of and participation in arson prevention and investigation. Strike Force staff perform general outreach activities, including public speaking, media campaigns, and development of preventive strategies such as community-wide

patrols and building watches. Additionally, community members participate in research activities under the guidance of Arson-for-Profit Information Center staff.

Monthly reports generated by the Community Outreach Unit are distributed to a variety of community groups. The Community Outreach Director trains community members in collection of building/owner data from city files. The Strike Force also plans to use the Arson Risk Prediction Index to identify arson-prone neighborhoods and to develop prevention strategies in cooperation with community groups and city agencies. The Strike Force has assisted in developing an insurance company notification program which enables community members to contact insurers through the Strike Force about building conditions or suspicious activities suggesting potential arson. A pilot "hotline" has been installed in one neighborhood.

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Until July 1980, the Arson Strike Force was supported entirely by funding from outside sources; however, the Mayor's Office now supports the Strike Force's core staff of four people. In addition to the ongoing programs outlined above, the Strike Force has obtained outside funds for a number of related projects. For example, sealing of vacant or abandoned buildings in New York City has been accelerated by a grant from the American Insurance Association for advance payments to contractors, and by prioritizing sealings and demolitions for the Housing Prevention and Development and the Building Departments. The Strike Force has recently obtained funding to study arson investigation planning and technical resources, including upgrading the Police Lab Arson unit, establishing mobile arson-investigation units, and improving investigator training. Strike Force staff have developed proposals for arson-related legislation, and have conducted a study of insurance company reporting and compliance with New York's Fire Insurance Proceeds law.

## D. <u>Resources Required</u>

1. <u>Personnel</u>. The Arson Strike Force is staffed by 19 full-time employees, including the Coordinator (Thomas Martin); Deputy Coordinator (Michael Jacobson), who also serves as a fire/police liaison; Director of Research; Assistant to the Coordinator; project directors for the various research and action programs administered by the ASF; and two computer specialists. One staff member, the Community Outreach Unit Director (John Nealon), is supported by USFA/AIMS funds.

The Arson-for-Profit Research project staff consists mainly of part-time senior citizen workers who have conducted much of the data collection from city files required for the Arson-for-Profit Information Center.

2. Equipment and Software. The Arson Strike Force uses three different city computer systems. The Strike force has display terminals and printers linked to the city's Housing and Finance files, providing direct access to current information On property in New York City. Data processing developmental work is done on the city's Computer Service Center computers (IBM 370's) using a time-sharing system (CMS). The Strike Force has two hard-copy terminals.

Data bases for development of the Arson Risk Prediction Index were created and edited using COBOL programs written by Strike Force staff. Commercial software packages (SPSS and BIOMED) were used for statistical analysis of building samples.

3. <u>Data Sources</u>. The Strike Force coded and computerized two years of fire investigation reports to create a data base of determined arsons for risk-prediction analysis and to establish an ongoing automated system for fire-incident information. The Fire Department has assumed responsibility

for maintaining an on-line current data base of fire incident reports initially using coding forms and instructions developed by Strike Force staff.

Statistical analysis for the Arson Risk Prediction Index and the ongoing research of the Arson-for-Profit Information Center require extensive use of city files for a range of data on New York property. The following list includes examples of data sources and categories collected for both projects:

#### Source

Finance Department (on-line computer system)

Department of Housing Preservation and Development (on-line computer system)

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Department of City Planning (computer system)

Fire Department Battalion Chief Reports and Fire Investigation Reports

### Type of Record

For all New York property:

Owner; date of latest deed; assessed value; tax payment history and current arrearages; person billed for taxes; and building class

For all multiple dwellings:

Owner/agent name and addresses; number of units; housing code violations; date of last inspection; outstanding complaints; emergency repair records

Property transactions; vacant building history; occupancy rate; public assistance data

Fire history; arson investigation and determination

In addition, the ARPI project utilizes socio-economic and demographic data from U.S. Census files and Department of City Planning estimates, and loss history and insurance valuation information provided by insurance companies.

# III. <u>New Haven's Arson Warning and Prevention Strategy</u>

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New Haven's Arson Warning and Prevention Strategy (AWPS) is part of a comprehensive arson control program initiated in response to local governmental concern about the city's arson problem. In 1976, New Haven's Fire Chief began urging computerization of all Fire Department reports. In February 1977, the report of a grand jury investigation of 18 New Haven arson fires recommended the study of events leading to arson incidents, as well as Police Department, Fire Department, and prosecutorial cooperation in combatting arson. One month after the grand jury's report was issued, the Mayor of New Haven formed an Arson Task Force comprised of staff from the office of the Mayor, the Police Department, the Fire Department, and a private consulting company (Abt Associates). Recommendations of the Arson Task Force led to:

> Establishment of an automated fire incident file that can be accessed by names of witnesses, identified owners, addresses, etc., as well as by fire incident date and report number; a computer terminal in the Fire Department is used to update and access this information.

- Establishment of arson investigation teams comprised of one police officer and one fire investigator. Currently three fire investigators and three police officers are involved in arson investigations. They are cross-trained and report to the Fire Chief.
- Training of New Haven firefighters in detection of fire cause and in recognition of likely arson fires.
- 4. Development of the Arson Warning and Prevention Strategy to identify factors contributing to the occurrence of arson and to establish procedures for assessing arson-risk.
- 5. Cooperation between and among arson investigators, the AWPS, the Fire Department, the Police Department, and prosecutors.

### A. The Arson Warning and Prevention Strategy

The primary purpose of the Arson Warning and Prevention Strategy is identification of those buildings most prone to arson fire in the near future. Preventive measures can then be initiated by city officials, law enforcement agencies, insurance companies, and financial institutions. In addition, information collected by AWPS can be used in post-fire investigations. Investigative uses of AWPS information include identifying common characteristics in arson fires; identifying public adjusters, owners, and insurers frequently associated with arson incidents; and providing information on property histories.

Development of AWPS involved two major project phases: (1)identification of the set of variables most closely associated with arson incidence in New Haven; and (2) establishing an operational system for designating "at-risk" buildings for preventive (proactive) programs. During the first year of operation with funding provided by Factory Mutual System and the U.S. Fire Administration (1978-1979), AWPS staff conducted a study of 200 buldings in New Haven: 100 buildings which had sustained suspicious fires, randomly selected from fire incident records for 1973 through 1978; and 100 buildings having no record of suspicious fires during the same time period. Buildings in the latter (control) group were selected by matching features such as building use, size, construction material, and number of dwelling units with similar characteristics in the sample of buildings with suspicious fire histories.

Over 200 pieces of information describing each of the 200 buildings being studied were collected from the city Building Department, Clerk's Office, Tax Collector's Office, Housing Conservation and Enforcement Agency, Fire Department, and

Police Department. These data were coded on worksheets and keypunched in preparation for computer analysis. Statistical analyses, including regression analysis, first reduced the list of 200 variables to 67 variables, and later identified four variables that were very good predictors of arson: tax delinquency, liens and attachments, previous fires, and unabated housing code violations. In combination these variables accounted for 78 percent of the variance in arson incidence between the two samples of buildings. Identification of these "trigger" variables provided the basis of AWPS's current arson prevention activities.

Establishing an operational system for identifying "at-risk" buildings in New Haven began in November 1979 with additional funding from Aetna Life and Casualty. A two-year history on each of the four trigger variables was collected for every building in New Haven. Thus, all fires, tax arrearages, unabated housing code violations, and liens on buildings between January 1977 and December 1979 were recorded on color-coded index cards arranged alphabetically by building 🐃 address. The first "at-risk" list--buildings with all four variables--was produced from this file in February 1980. AWPS staff also spent several months in 1980 verifying building addresses and information to ensure reliable risk assessment. This data base is updated monthly with current information and provides a filing system that readily identifies all likely arson targets.

"At-risk" buildings, with histories that indicate the presence of all four arson-risk variables, are flagged for immediate arson prevention measures. In addition, various combinations of three variables are identified for intervention strategies. AWPS staff gather supplemental information on these arson-risk buildings from city files, agencies, insurance companies, and on-site visits. A file is established for each at-risk building that includes the assessed value of the

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building, insurance coverage and inspection information, a physical description of the property (including photographs), reports of police response to incidents at that address, and title search data.

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The list of at-risk buildings is distributed from the Chief of the Fire Department to the Fire Marshal, Arson Squad Captain, Assistant and Deputy Fire Chiefs, Fire Department Training Officers, Police Chief, Police Department Planners, States Attorney, Tax Collector, City Assessor, City Development Administrator, Redevelopment Agency, Housing Conservation and Code Enforcement Agency, and the Building Department. AWPS staff work closely with city officials to design arson prevention programs tailored to specific buildings based on building history and owner's experience with previous arsons and/or suspicious fires, if any. Such strategies may include police and fire department surveillance, owner notification of the at-risk status of the building, action by city housing departments (e.g., foreclosure, purchase, rehabilitation or demolition), or accelerated code enforcement.

AWPS staff also compile supplemental data as requested by the Fire Department's Arson Squad for post-fire investigations. This assistance frequently takes the form of financial profiles on buildings sustaining arson fires, including title search, zoning, and code violation information, as well as the information available in the AWPS card filing system described above. AWPS uses the manual card file to provide fire/arson investigators with pertinent building information and successfully maintains building data for coordination of prevention programs with other city agencies. While the manual system and hand-tailored prevention strategies

\*See, also, the discussion of data sources utilized by the AWPS insurance specialist, page 74 below. are extremely effective in a city the size of New Haven, the automation of this filing system will increase its speed and information capacity dramatically.

Accordingly, AWPS is in the final stages of automating the present manual risk-prediction system. Automation will be accomplished by transfering the information currently maintained manually on the AWPS card file to computer files. AWPS staff will augment these basic property descriptions and histories of fire incidents, tax arrearages, unabated housing code violations, and liens with additional historical data on trigger variables from city files. Once this is placed on computer files, city departments will be responsible for updating information from their own files. Automation will greatly expand the reactive and investigative capabilities of the system, as the Fire Department will have access to all information collected by or for AWPS through the Department's computer terminal linked to the city's data processing center.

The AWPS program has recently received USFA funding for analysis of the indicators of neighborhood-level socio-economic stress factors and their impact on fire incidence. During the initial stage of the project, study areas will be identified and data will be collected for analysis.

# B. <u>Resources Required</u>

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1. <u>Personnel</u>. The AWPS program currently has six staff members supported by a \$97,500 grant from Aetna Life and Casualty Company: the project director (Doss Sauerteig), a housing rehabilitation specialist, an insurance specialist, an administrative assistant, a research assistant, and a secretary. Data collection for the study of buildings that led to identification of arson trigger variables was accomplished with the assistance of four off-duty firefighters, who were employed part-time for this task in late 1978. Data on the four trigger variables for AWPS's building card file were collected by seven off-duty firefighters from New Haven's Fire Department, hired on a part-time basis in late 1979. In addition, students from local colleges have participated in data collection and analysis through New Haven's intern program.

2. Equipment and Software. Programming and data processing operations during the first stage of the project were contracted to a statistician at Yale University. All data processing was done at the Yale University Computer Center on an IBM 370/158. Statistical procedures from SAS (Statistical Analysis Systems), a commercially available software package, were used to identify trigger variables.

All present work, including automation of the riskassessment procedure developed by AWPS, is done on New Haven's city computer, an IBM 4341. AWPS does not do its own programming but contracts with others for programming services as needed.

3. <u>Data Sources</u>. AWPS made extensive use of city records during the initial stage of the project to obtain data on sample buildings. The following list includes broad categories of information collected for the analysis of arson-risk factors:

#### Source

### Type of Record

Building Department

City and Town Clerk

Collector of Taxes

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Building code violations and abatements; record of building inspections; demolition

information; record of building permits issued

Type of conveyances; transfers of property; liens on property

Total amount of tax arrearage; number of years back taxes owed; address where tax bills are sent Fire Department

All structural fire responses; use and occupancy of structures at time of fire; situation found at fire; ignition factor at fire; property damage loss from fire; fire code violations and abatements

Housing code violations and abatements

Police Department

Housing Conservation and

Code Enforcement Agency

All police responses

These data sources were also used in establishing--and are used in maintaining--the AWPS file of building trigger variable information.

Additionally, the insurance specialist collects information on insurance coverage of at-risk buildings. Identifying insurers of specific properties requires a great deal of research, but cooperation of insurers is facilitated by new Connecticut legislation which requires insurance companies to furnish insurance records upon request. This legislation is especially valuable to the AWPS system in that it allows for a <u>pre</u>-fire exchange of information between the insurance company and the local investigative unit or fire department.

IV. Knoxville AIMS Project

The Knoxville AIMS program is administered and conducted by one person, David Icove, whose salary is provided by a USFA/AIMS grant. Icove is formally a member of the Knoxville Fire Department (he is a fire investigator) but works with and has his office in the Planning and Research Division of the Knoxville Police Department. The AIMS project was established in November 1979 to automate Knoxville's fire incident files and to implement a computer program package written by David Icove. This computer package, the Arson Pattern Recognition

System (APRS), is designed to facilitate case management, arson pattern recognition, and prediction of arson fires.\*

The City and County of Knoxville have participated in a variety of criminal justice and planning programs; a number of grants have been awarded for the development of pilot programs and for extensive use of computers for city and county business management, as well as for criminal and civil justice information management. However, the Fire Department's records are maintained manually, and implementation of the APRS in Knoxville has been postponed until automated fire incident data are available.<sup>\*\*</sup> Therefore, the primary focus of the AIMS program to date has been completion of the APRS software and installation, testing, and verification of the program package in other jurisdictions.

Perhaps because of the program's close ties to the Police Department, Knoxville's project director is committed to reactive objectives: improving arson investigation capabilities, and more specifically, increasing the arson clearance rate. However, APRS contains a number of program procedures which can serve both proactive and reactive goals. Major functions of the system are: (1) <u>case management</u>, including assessment of arson risk and screening for case solution or arrest potential; and (2) <u>pattern analysis</u>, including identification and prediction of arson incident trends based on geographic and temporal fire incident data. In addition, APRS contains data summary and display procedures and subroutines, which provide for interface with other software

\*See also Bryan, J. L., and Icove, D. J., "Recent advances in computer-assisted arson investigation." <u>Fire</u> Journal, January 1977, pp. 20-23.

\*\*Initiation of an NFIRS-format reporting system is expected in 1981. systems. The case management, pattern analysis, and data display and mapping capabilities are outlined below.

### A. Case Management

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The case management functions of APRS can be broken down into three categories:

- Case outcome prediction based on solvability factors, which are indicated in preliminary investigations and prior arrest history by the presence or absence of certain factors.
- Building risk assessment based on insurance underwriting and loss history data.
- Preparation of FBI Uniform Crime Report statistics using available case data.

Case predictions, or screenings, evaluate investigative data against evidentiary requirements, profiles of arrested arsonists and their modus operandi, and other criminal justice agency information to assess the investigative or prosecutorial potential for specific cases. APRS uses discriminant analysis to assess arson risk associated with specific buildings; this analysis is based on insurance underwriting practices and loss history data. For insurance companies, this technique can improve the speed and accuracy of routine screening of applications, and claims. For enforcement agencies, the technique can be used to assess the likelihood of arson in cases where underwriting data are available.

# B. Pattern Analysis

Pattern analysis can be conducted in three ways with APRS:

Hierarchical cluster analysis of selected variables.

Non-hierarchical cluster analysis of geograhic and temporal variables, relating individual cases to their associated clusters.  Discriminant analysis on up to four groups totalling 500 cases, for statistical predictions of case placement within groups.

In general, these APRS pattern analysis procedures identify likely arson targets through analysis of temporal and geographic patterns of arson incidents. Unlike predictive models based on arson-related factors or conditions (e.g., New York and New Haven), APRS uses fire incident data alone to predict probable times and locations of future arson incidents. The mathematical procedures involved assume a pattern and consistent modus operandi for arson activity, and extrapolate, from historical data, trends to identify and expand arson incident patterns. This approach has been applied to other types of criminal activity (e.g., burglary) with some success, and can be used as a planning tool by enforcement agencies, as well as in developing preventive programs for high arson-probability areas.

### C. Data Display and Mapping

The APRS allows for four types of data display and mapping:

- Histograms of selected variables (including temporal variables).
- Line-printer plotting of two selected variables.
- Scatterplot of temporal variables (day/time and week/time).
- Integer, contour, and density mapping of geographic incident data.

\*See "Principles of Incendiary Crime Analysis: The Arson Pattern Recognition System (APRS) Approach to Arson Information Management" (available from Knoxville's Incendiary Crime Analysis Unit) for further discussion of these data mapping routines. These data display and mapping procedures provide graphic representations of the incident and case data contained in a jurisdiction's automated files. Along with the Uniform Crime Report statistics that can be provided by the case management function of APRS, the data display and mapping procedures can be of assistance in preparing departmental reports, in easing the burden of in-office record-keeping, and in planning for the allocation of resources.

The APRS is described in some detail in Dr. Icove's dissertation, "Principles of Incendiary Crime Analysis" (1979). Icove is currently preparing an APRS handbook and training guide for users. Installation of the system is underway in Dade County, Florida, which includes 16 jurisdictions but focuses on Miami. The APRS package will also be implemented in the New York State Office of Fire Prevention and Control under this USFA/AIMS grant to Knoxville. Since all of the APRS subprograms, including a variety of mapping, routines, are expected to be used in these two jurisdictions, the APRS will soon be receiving valuable field testing.

# D. <u>Resources Required</u>

1. <u>Personnel</u>. APRS has been developed by David Icove, who also handles installation of the system for the host jurisdictions (Dade County, Florida; and New York State Office of Fire Prevention and Control). Since different levels of data collection characterize each jurisdiction, implementation involves data coding and editing and the creation of cross-reference files, as well as preparation of subroutines to interface automated fire incident files with APRS software.

2. Equipment and Software. APRS is designed as a highly transferable program package for use on any computer system (including minicomputers) with ANSI-FORTRAN capabilities. Core

storage requirements are 140K (with program overlay) or 212K (without overlay). Icove is currently installing APRS on an IBM 370 computer in Dade County, Florida; the system has also been successfully compiled on Knoxville's Data General NOVA 4X computer.

Data display is presently programmed for line-printer output. However, Icove plans to add terminal access and display capability to the system in the future.

3. <u>Data</u>. APRS pattern analysis and display routines operate on an automated file of basic fire incident data of the type recorded and coded using the No. 901 Standard Reporting Form of the National Fire Incident Reporting System. Trend analysis and prediction require a substantial historical data base. Icove recommends a minimum of two years of automated fire incident data for these functions.

Similar historical files of underwriting and investigative data are necessary for discriminant analysis of case-screening and risk-assessment procedures. APRS data coding forms have been designed for reporting the supplementary data (e.g., names, insurance data, and case-closure information) required by case-management subroutines.

### V. Phoenix Fire Department AIMS Program

The Phoenix AIMS project is administered by the Intelligence Unit of the Fire Department's Fire Prevention and Investigation Division. Preventive and investigative efforts of the unit and its AIMS project are facilitated by the Phoenix Arson Task Force, a coalition of public- and private-sector representatives concerned with arson prevention and control. The Task Force was established by the Mayor in 1978 to serve policy development and planning functions, and now meets quarterly following completion of the Fire Department's quarterly reports.

As the Division name suggests, the Phoenix approach to arson is both proactive and reactive. The Intelligence Unit of the Fire Prevention and Investigation Division serves as a coordinating center for arson-related data collection and dissemination, and for development of planning strategies for Police and Fire Department arson investigation. The AIMS program focuses specifically on information management for improved investigative and preventive capabilities. The primary objective of the AIMS project has been automation and maintenance of arson-related information files.

## A. Arson-Related Information Files

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The AIMS project has established, and maintains, the following data files to aid in case management, investigations, and preventive programs:

1. Fire Incident File. The fire incident file contains information from fire incident reports, including incident number, date, time and location of the fire, structure/vehicle type, estimated loss, owner/occupant name, and casualty (monetary loss) data. AIMS staff have designed data recording forms for the Fire Department Arson Investigation Squad and the Police Department Bomb and Arson Squad. Data on all fires investigated in 1980 (approximately 90 percent of all reported fires occurring in Phoenix that year) have been automated. The fire incident file serves as an index to fire incident reports and as a data base for summary reporting of fire incidents by fire station responsibility area, property type, and other categories.

2. Insurance Claim File. The insurance claim file contains information from insurance claim reports as well as fire incident reports. Information contained in this file includes fire incident number, date and location of fire, name of insured/claimant, estimated loss, amount of claim paid, previous fire history, and insurance company and claims adjuster identification. Comparison of the claim paid and the investigator's estimated loss can be used to identify likely arson frauds. The Phoenix Fire Department provides copies of its fire investigation reports to insurance companies and adjustors on request and has previously used these requests to, in turn, request claims information from insurers. A recent change in the Phoenix Fire Prevention Code requires routine reporting by insurance companies on all insured fires in Phoenix, and enables the AIMS program to maintain a comprehensive file of claims activity.

3. Occupancy Inspection Control File. Each fire station in Phoenix has three inspection teams on a rotation basis inspecting approximately 23,000 occupancies (as defined by NFPA #901 Uniform Coding for Fire Prevention). Inspection reports were previously maintained manually, and somewhat haphazardly. The automated occupancy inspection control file now contains current data on location, occupancy class, owner type, building characteristics, hazards, permits, and inspection priority.

Phoenix pursues an aggressive code enforcement policy: failures to comply are prosecuted by a city attorney either before a fire occurs or following a fire if <u>any</u> code violations were recorded prior to the fire or during post-fire investigations.

AIMS staff are now working on a criminal activity file of arson arrest and case disposition data to aid in investigation

and case management. In addition, the Phoenix Police Department maintains related files on arson suspects and arson locations which can be cross-referenced to Fire Department files by incident number and name(s).

Automation of Fire Department data files permits fast and efficient access to fire-related information and incident summaries for use as a management and planning tool. Summary reports are distributed to Police and Fire Department units for investigation, to the Arson Task Force, to the City Council and Mayor's office, and to other law enforcement agencies. Information (other than criminal activity data) is provided to other interested parties (insurance companies and adjustors, owners, etc.) at a cost of \$1.00 per page.

### B. <u>Resources</u> Required

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1. Personnel. The Intelligence Unit of the Fire Prevention/Investigation Division has ten fire investigators, one records clerk, one secretary, a municipal fire loss administrator, and four detectives assigned to the unit by the Phoenix Police Department. Prosecution aspects of fire code violations are coordinated with the city attorney's office by two Special Investigators. The fire loss administrator (Robert Belk), a civilian employed by the Fire Department, assumes responsibility for assembling data describing fire losses in Phoenix, and maintains cooperative relationships with insurance companies and organizations, public fire loss adjusters, adjusting companies and organizations, and other governmental agencies (e.g., police department detectives). The fire loss administrator is the only member of the unit whose salary is paid by the Department's USFA grant; all other unit members are regular fire service employees (or police officers reporting to the Fire Department).

2. Equipment and Software. The Phoenix AIMS project uses an efficient and cost-effective word processor (Olivetti TES 501) with floppy disc storage for all file maintenance and reporting. Coding, data entry, and programming are handled by one full-time word-processor/secretarial employee on the Fire Department staff.

3. <u>Data Sources</u>. Fire incident and occupancy inspection data are received from Fire and Police Department investigators and fire code inspectors on standard departmental reporting forms.

The municipal fire loss administrator, Robert Belk, has initiated contacts with insurance companies and established insurance claim reporting procedures. The Phoenix Fire Department receives information on claims activity from the Property Insurance Loss Register (PILR) for all participating companies. Other insurers provide information directly to the Department on standard PILR or similar reporting forms, in compliance with the Phoenix Fire Prevention Code requirements.

# VI. <u>San Francisco Early Earning System and</u> Arson-for-Profit Study Program

The San Francisco Early Warning System and Arson-for-Profit Study Program ("EWS") has been designed and conducted by one Person, Barry Goetz, under the auspices of the city's Arson Task Force with funding from the U.S. Fire Administration. The Task Force, comprised of representatives from the Police Department, the Fire Department, community groups, and businesses, was created by the late Mayor George Moscone in 1977 to explore ways of reducing the incidence of arson in San Francisco. Its EWS is a research project focused on arson-for-profit and is patterned on the building-history

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approach to arson prediction developed by Urban Educational Systems (UES) in Boston.

The EWS research effort is primarily proactive in orientation, directed at understanding arson-for-profit in order to develop more effective prediction and prevention of economically motivated arson activity. Through collection and analysis of historical data on building/owner characteristics and socio-economic factors associated with arson, the study aims at correlation of specific variables with arson-for-profit incidence, identification of arson-for-profit motives, and prediction of likely arson-for-profit targets.

It is important to note that the San Francisco Fire Department has maintained comprehensive automated record-keeping systems since the mid-1970's. The Department's arson investigation unit operates an arson information management system, an automated record-keeping system for arson-related information, and has on-line access to automated law enforcement and criminal justice files. Command and Control maintains an automated dispatch system, which also allows for the storage and retrieval of investigative information. The existence of these sophisticated systems has undoubtedly influenced the nature of the Early Warning System and Arson-for-Profit Study Program, even though the EWS is not directly affiliated with the Fire Department. For example, the EWS program goals include: (1) standardization of data collection procedures for compiling building and owner information (to aid in Fire Department investigations); and (2) eventual automation of building history data (to supplement the

\*San Francisco's information management system was developed under the supervision of Lieutenant Richard Crispen, now Fire Marshal for the Port of San Francisco. Development and implementation of this system was supported in part by the Law Enforcement Assistance Administration.

arson investigation unit's information management system). Therefore, while the EWS is primarily oriented toward proactive ends, it also contributes to investigative (reactive) efforts.

### A. EWS Research Activities

During the initial phase of the research, three study areas were identified in San Francisco neighborhoods with high rates of fire and arson incidence. Building samples were selected from a six-to-ten-block radius in each area, using data from Fire Department incident reports. Ninety buildings comprising the total sample were divided into three experimental groups: (1) buildings with determined arson histories; (2) buildings with a history of accidental fires or with owners associated with frequent fire incidents ("arson-risk" group); and (3) buildings with no fire history (control group) . Data a set of the collection consisted of extensive searches of non-automated public records and automated fire incident and inspection reports to compile a structural and financial profile on each building and on corporations/owners and other individuals (e.g., contractors, realtors, insurance adjustors, and lenders) associated with the building. Examination of city and county records provided data on sales transactions, liens, defaults, and foreclosures, tax payments, code violations, vacancies, alterations, and insurance coverage.

Analysis of building and owner data consisted of comparing and relating particular variables across study groups to identify characteristics uniquely associated with arson-for-profit. All data analyses have been done manually. Results of preliminary analysis of the three study areas revealed a number of factors which showed statistically significant variation among experimental groups (determined arsons, arson risks, and controls). Buildings with histories of determined arson differed in size, use, frequency of fire

incidents, vacancy rates and total-vacancy status at the time of fire, severity of code violations, building repair frequency and cost, tax arrearages, and sales frequency. Using the results of this analysis, Goetz has identified 24 possible arson targets in the study areas; the possible arson targets are buildings having characteristics associated with arson-for-profit.

Current project activities focus on two additional study Building samples have been selected in a fourth groups. neighborhood showing high fire and arson incidence. Information collected on these buildings will be added to the original data base for further analysis. The fifth study group consists of a variety of individuals and corporations (e.g., owners, lenders, realtors, etc.) identified in the initial phase of the research, whose names frequently appear in connection with incendiary or numerous accidental fires. Using public records, research will seek to establish comprehensive financial profiles on these individuals and to collect data on associated property not included in the original samples. Analysis of background information of persons and buildings is aimed at isolating possible arson-for-profit motives and procedures. These may include: (1) "paper pyramid" sales, which artificially inflate building values and insurance Coverage; (2) "parcel clearance," which uses arson for demolition of low-income property; and (3) "arson-for-profit for rehabilitation," which clears building interiors for higher-income unit construction.

In addition to data collection and analysis on the research samples, described above, Goetz has conducted background investigations on approximately 20 buildings at the request of the Fire Department's arson investigation unit. He has also developed data collection forms and a manual on research procedures for use by Fire Department investigators, and has offered guidance to members of the Fire Department, Police Department, and District Attorney's office on how to conduct public records research. All data collected for the AIMS study has been recorded on standardized data forms that could be used to develop an automated arson risk-assessment system.

### B. Resources Required

1. <u>Personnel</u>. San Francisco's EWS program is staffed by one person, Barry Goetz, who is responsible for all research design, data collection, and analysis.

2. Equipment and Software. All project tasks are manual.

3. <u>Data Sources</u>. Goetz has made extensive use of automated and manual city files, as well as outside data sources. Following is a list of files consulted in preparing structural and financial profiles:

### Data Source

San Francisco Fire Department and Bureau of Fire Investigation

County Recorder

County Assessor

County Clerk and Superior Court/Municipal Court Files

Tax Collector

Central Permit Bureau

Department of Apartment and Hotel Inspections

### Type of Record

Fire incident statistics and reports; fire prevention reports on fire code violations; building structure and use data

Deeds of transfer and trust; liens, defaults, and conveyances

Sales transactions

Civil litigation data

Delinquent tax payments; municipal licensing

Building alterations

Housing, electric, and plumbing code violations

Division of Property Conservation

Abatement proceedings and appeals; condemnations

California Secretary of State Corporation data

San Francisco Library: Polk Directory

Insurance Companies

Department of Public Health

Mayor's Community Development Office

Rehabilitation Assistance Program

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Vacancies

Insurance coverage and claim data

Vacation proceedings

Developers' proposals and resumes

Owners' loan applications

# VII. Boston AIMS Project

The Boston AIMS program has been conducted by Urban Educational Systems, Inc. (UES), a private research organization. The founders of UES were actively involved in investigations of arson-ring activities in the Symphony Road. area of Boston from 1974 to 1977. Following the deaths of several tenants in arson fires, Symphony Road residents formed an organization (Symphony Tenants Organizing Project) to combat the arson problem. Background research conducted by this group On buildings and owners allegedly associated with arson fires suggested that the presence of certain events or characteristics prior to arson fires could be used to predict and hopefully prevent arson activity. In order to further pursue the prediction and prevention of arson in urban residences, UES was formed. UES then received USFA funding to conduct a study of arson-related building and owner characteristics, and to develop an automated arson early warning system. This USFA grant was awarded to the Office of the Massachusetts Lieutenant Governor and administered by UES, which serves as a subcontractor to the Lieutenant Governor.

The UES anti-arson program has two components, both of which are primarily proactive in orientation. First, UES is engaged in basic research to define building and owner arson-risk assessment procedures and establish a computer-based technology for identifying and predicting risk-prone buildings and owners. The risk-assessment procedure is intended as a management and planning tool for use by police and fire departments (e.g., for resource allocation and investigative lead assessment); municipal agencies (for inspection, code enforcement, and city planning); insurance companies (for inspection and underwriting risk-assignment); and neighborhood groups (for monitoring local property conditions).

Second, UES is concerned with applying research results through community-based arson prevention programs. As might be expected from its origins, UES places great importance on community organization and activism. Through the office of the Attorney General in Massachusetts, for whom it is a contractor, UES is working with community-based organizations to apply arson prediction and prevention measures in Boston neighborhoods. Under subcontract to the Office of the Lieutenant Governor in Massachusetts, UES is also providing technical assistance to community-based organizations to establish arson research and prevention programs.

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### A. Arson Early Warning System

UES research staff have conducted an historical analysis of building and owner data on absentee-owned, multi-unit residential property in Boston. This research is aimed at establishing an automated risk-assessment procedure replicating the manual arson risk identification process developed by UES and specialists in housing and arson. Objectives of the study include: (1) demonstrating a consistent pattern of events preceding arson fires, (2) identifying data from public records

which best characterize these events, and (3) determining those factors which most reliably distinguish buildings that experience arson fires from those that do not. UES staff identified 78 absentee-owned, multi-unit buildings from Fire Department incident reports for June 1977 through May 1978. These buildings comprised the research (or experimental) sample and had sustained fires designated as incendiary or suspicious in origin, or which had caused the building to be razed or abandoned following the fire. These buildings were geographically matched to a control sample of 78 buildings with no fire history for the same time period.

UES staff gathered extensive background data on all experimental and control buildings for a ten-year period preceding the 1977-1978 fire incident dates. All data were collected from public records, including Boston Housing Inspection and Building Department files, Suffolk County Tax Assessor's Office records, Registry of Deeds, and fire incident reports. Over 300 variables were identified for two general categories: (1) economic stress factors of the buildings, and (2) characteristics of the owner. "Economic stress" factors include such items as vacancy rates, debt-to-equity ratio, sales transactions, previous fire record, building and sanitary code violations, tax arrearage, lien attachments, information from rent control administration records, and time lag between building citations and repairs. Owner characteristics include such factors as previous fire record, owner's business associates (i.e., co-owners, or interested partners), rent control records, housing code violations, records on owner's other locally-owned property, and owner's financial status. In many cases a distinct separation between economic stress factors and owner characteristics is not possible; for example, code violations and tax arrearage appear in both the economic stress factor and the owner characteristic categories. Data were recorded on standardized coding forms for keypunching or

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direct key-in via on-line terminal in preparation for computer analysis.

To date, UES staff have used economic stress factors and fire history data in a number of analytical procedures, including factor and discriminant analyses, aimed at isolating reliable predictors of arson-prone buildings (the 78 "experimental" buildings with serious fire histories). Analyses endeavored to identify both short-term (within six months of fire occurrence) and long-term (up to six years prior to fire occurrence) characteristics associated with arson fires. Results indicate that no one variable, or discrete set of variables, completely discriminates arson from non-arson cases in the research sample. However, buildings sustaining arson fires were generally found to show more activity in the public records over a three-year period prior to fire and the second second occurrence. This activity included multiple code violations and Registry of Deed transactions, and multiple fires in the same building or in other buildings with the same owner of The risk assessment accomplished by these analyses was record. most reliable in targeting buildings that will experience arson fires. However, some buildings were found to sustain arson fires with no discernable warning signs; risk-assessment was therefore likely to accurately predict only some arson-prone buildings while assigning others to a low-risk category.

Analyses of building, owner, and fire incident data have been useful in determining patterns of fire incidence and Characteristics associated with the fire-cause classifications recorded on fire incident reports. Research methods and data collection procedures developed by UES can be adapted by city agencies and community groups to assess information needs and to guide data gathering and analysis for planning arson prevention and investigation strategies.

### B. <u>Technical Assistance</u>

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Application of UES' research activities draws on expertise in data collection and analysis to assist community-based organizations in planning and establishing their own arson information management systems. Under subcontracts to the Office of the Massachusetts Lieutenant Governor, Thomas O'Neill, and to the Office of the Massachusetts Attorney General, UES has been involved in developing, implementing, and evaluating pilot programs for 13 community-based organizations in Massachusetts, New York, New Jersey, Indiana, and Illinois. Technical assistance provided by UES is tailored to the organizational structure and resources of each group, and many include:

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Training in arson information management, research design and methodology, and arson prevention strategies.

 Identification of arson-related information sources and data collection procedures for use by host jurisdictions.

- Establishment of manual or automated information management systems.
  - Analysis of incident patterns and building owner and/or neighborhood characteristics associated with arson incidence in host jurisdictions.
- Development and testing of prediction methodology for arson risk assessment tailored to host jurisdictions.

UES has completed several manuals for use by community-based organizations and municipal agencies, including: (1) <u>Research: A Manual for Arson Analysis and</u> <u>Property Research; (2) Arson Action Guide; and (3) Tools:</u> <u>Anti-Arson Programs and Legislation</u>. These manuals are currently available from UES (see Appendix II). In addition, UES has developed a complete set of data collection forms for public records research.
# C. <u>Resources Required</u>

1. <u>Personnel</u>. UES is staffed by six full-time employees offering a range of skills from statistical and computer training to community organization experience. Two computer specialists (one full-time, one half-time), one researcher, and an administrative assistant (half-time) have been assigned to the Arson Early Warning System study.

2. Equipment and Software. Data processing operations are conducted at local universities, primarily Northeastern University's academic computer system (VAX11). UES maintains a terminal in its offices for data-entry and programming. Commercially available software packages (SPSS and INGRES) have been used in statistical analyses for the Arson Early Warning System.

3. <u>Data Sources</u>. All data on building and owner characteristics for the risk assessment study were obtained from public records. The following sources in Boston and Suffolk County were used:

# Source

Fire Department

Registry of Deeds

Building Department

Tax Assessor's Office

Housing Inspection Department

Rent Control Office

# Type of Record

Fire incident reports

Sales transactions; encumbrances and foreclosures; co-owners and mortgagees

Alterations; legal occupancy; code violations

Tax payment history

Sanitary code violations

Petitions and citations

In addition, owner-related data which have not been analyzed were collected from the State Department of Corporations, <sup>3</sup>City Bureau of Vital Statistics, State Bureau of Motor Vehicles, County Civil and Criminal Court Indexes, City and County Licensing Boards, City and County Clerk's Offices, City Voter Registration Office, County Probate and Divorce Courts, business libraries and newspaper files.

# VIII. Seattle AIMS Project

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The Seattle AIMS program is being conducted by the Arson Alarm Foundation, a private non-profit organization having no formal affiliation with Seattle city agencies. The project is designed to increase understanding of arson in Seattle by conducting an historical/statistical study of social, economic, criminal justice, and geographic indicators of arson in Seattle neighborhoods. Although the project itself is entirely research-oriented, it is hoped that research results will be used by the Seattle Fire Department and other city agencies as a long-range planning and management tool. By identifying factors that lead to arson, and gaining a better understanding of areas that are likely to become frequent arson targets, this study could assist Seattle in future planning for the allocation of fire prevention, fire fighting, and fire investigation resources.

Project activities during the first four months of operation (beginning in July 1980) were directed toward research design and identifying sources of arson and socio-economic data for analysis. While the bulk of the project's efforts will be concentrated on an assessment of factors associated with arson, project staff are also developing an "Absolute Predictive Model" that may be of use in arson investigations. These project activities are discussed separately, below.

#### A. <u>Historical Study of Determinants of Arson</u> in Seattle Neighborhoods

Research on determinants of arson in Seattle will build upon two earlier socio-economic studies of arson incidence in Seattle conducted by the Arson Alarm Foundation (see Appendix II). The first report, issued in 1976, compiled historical data on arson incidents, arson suspects, and case Through regression and factor analyses of dispositions. demographic and economic variables, the study attempted to identify arson indicators for prediction and prevention programs. A follow-up study completed in 1980 reported recent data on incidents, arson suspects, arson settings (building categories), and prevention programs. Results of these arson-determinant analyses were inconclusive, and both reports recommended further research using neighborhoods rather than census-tracts as the analysis unit in order to capture local economic and demographic variation.

The AIMS project staff are presently organizing economic and social data from the two previous studies and recent fire incident data, for in-depth analysis of selected areas in Seattle. Project staff plan to assemble data bases for three time periods: (1) 1970-1974 socio-economic data; (2) 1975-1977 socio-economic data and fire incident data; and (3) 1978-1979 fire incident data.

The study will examine the relationships between dynamic socio-economic factors and arson incidence by identifying changing socio-economic conditions between the base period (1970-1974) and the comparison period (1975-1977), and their effect on changing arson rates in the 1975-1977 and 1978-1979 time periods. Correlation analysis will be used to explore relationships among social, economic, and spatial variables on a census-tract level. These data will then be grouped by

factor analyses to distinguish Seattle neighborhood characteristics. Arson statistics will be organized by census tract on a per capita and per housing-unit basis. On the basis of these analyses, as well as field interviews with experts familiar with socio-economic conditions and/or arson problems in Seattle, neighborhoods will be selected for intensive analysis. The intensive analysis of selected neighborhoods (which will include regression analyses) will seek to identify factors associated with increasing, decreasing, or stable arson rates.

#### B. Absolute Predictive Model

One member of the project staff is also working on development of an "Absolute Predictive Model" patterned on the Arson Pattern Recognition System developed in Knoxville. Using data on a series of 18 fires set by one arsonist in Tacoma, Washington, the researcher tested the accuracy of trend analysis of geographic and temporal variables in predicting arson targets. Results so far indicate that maximum accuracy is obtained at six cases, and that predictability does not improve with additional data. With six incidents, Predictability within a one-mile radius is achieved. It is hoped that further work on the model, with additional data on another arsonist or arson ring, will improve the utility of this approach.

# C. <u>Resources Required</u>

 <u>Personnel</u>. The Arson Alarm Foundation's AIMS project is staffed by five people: the project director (Tom Brace), two researchers, a research assistant, and one computer programmer. The researchers will guide the preparation of data files, statistical analysis, development of the Absolute Predictive Model, and interpretation of the results.

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2. Equipment and Software. The historical/statistical study of arson in Seattle will be conducted on the University of Washington's computer (CDC 6400). In addition to FORTRAN programs that will be written to assemble and interface data files, project staff expect to use commercial software packages (SPSS and possibly BIOMED) for data analysis.

The "Absolute Predictive Model" is being developed on a micro-processor using BASIC programming.

3. <u>Data Sources</u>. In addition to the automated socio-economic data files assembled for the previous arson studies in Seattle, project staff will use information from a variety of sources, including the following:

> University of Washington, Geography Department, Seattle; socio-economic data from an automated data base of over 800 variables.

Bureau of Census 1970 demographic data.

R. L. Polk Directory 1974 and 1977 data.

• Seattle Fire Department 1970-1979 (and possibly 1980) fire incident and investigation reports.

The Absolute Predictive Model has been developed using arson incident data supplied by the Tacoma Fire Department; it is hoped that similar data will be made available by the Seattle Fire and/or Police Departments.



#### Appendix I

#### AIMS Program Contact Persons

New York:

Mr. Michael Jacobson Deputy Coordinator Arson Strike Force 51 Chambers Street, Room 525 New York, NY 10007 (212) 566-7263

Ms. Doss Sauerteig Project Manager Arson Warning and Prevention Survey 157 Church Street, Room 307 New Haven, CT 06510 (203) 787-7062

Dr. David Icove AIMS Project Director Incendiary Crime Analysis Unit Knoxville Fire Department 800 East Church Avenue Knoxville, TN 37915 (615) 521-1200

Chief James A. Walker Fire Investigation Division Phoenix Fire Department 620 West Washington Street, Room 167 Phoenix, AZ 85003 (602) 262-7712

Mr. Barry Goetz Arson Early Warning System San Francisco Fire Department 260 Golden Gate Avenue San Francisco, CA 94102 (415) 861-8000

Dr. David Scondras Urban Educational Systems, Inc. 153 Milk Street Boston, MA 02109 (617) 482-4477

Mr. Mark Smith Principal Researcher, AIMS Project 2633 N.E. 82nd Street Seattle, WA 98115 (206) 524-2846

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New Haven:

Knoxville:

Phoenix:

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San Francisco:

Boston:

Seattle:

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# Appendix II

#### Supplementary Technical Information

This appendix summarizes the results of a mailed survey of the seven AIMS programs. After completing site visits to all cities and reviewing a range of each city's program proposals and project reports, this survey was conducted to gather further technical information on the AIMS programs. Naturally, differences in the technical information provided by the programs reflect variations in the programs themselves. The information collected by the survey is presented in outline form, largely as it was reported by the survey respondents.

#### NEW YORK CITY ARSON STRIKE FORCE (ASF)

#### I. Data Collection and Coding Forms

Title

### Description

ASF Keypunch Coding for Fire Investigation Form FI-101

#### Project Reports, Descriptions, Publications II.

Title

Predicting Arson Risk in New York City--A First Report

Arson Risk Prediction Index: A Report for Potential Users

Arson Analysis and Prevention Project: Final Report

ASF Semi-Annual Report to City Council #1-5

Available from:

Description

Description of ARPI Study and results.

Lay description of ARPI index and construction and uses.

Coding form and instructions for

Final Report on first year of LEAA-Arson Analysis and Prevention Project, New York City Arson Strike Force.

Reports on all ASF activities, including AIMS activities.

Michael Jacobson Deputy Coordinator Arson Strike Force 51 Chambers Street, Room 525 New York, NY 10007

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# Requirements Analysis: Arson-for-Profit Information Analysis Project

Researching Arson-for-Profit: A Manual for Investigators and Prosecutors

Description of interviews with users and proposed arson-for-profit information center.

Description of guidelines for developing arson-for-profit research system. Specific instructions for using New York City materials.

#### Available from:

Steven Ernst, Director Arson-for-Profit Information Center Arson Strike Force 51 Chambers Street, Room 525 New York, NY 10007

#### III. Computer Software

#### Title

# Division of Fire Investigation Edit and File Create Program

Edits fire investigation coded information and creates a file of fire investigation data. Purpose: file creation. Specially written, not available.

Description/Purpose

Various report and listing programs

Lists: Fire investigation data: ARPI scores. Purpose: internal use; investigation and project implementation. Specially written, not available.

ARPI Creation System

Complex system to process city administration files and extract data for ARPI study and calculation. Purpose: analysis. Specially written, not available.

#### B. NEW HAVEN ARSON WARNING AND PREVENTION STRATEGY (AWPS)

#### I. Data Collection and Coding Forms

Title

Card Filing System

Description

Lists address of high-risk property,

A manual data base consisting of all fire incidents, all tax arrearages, all housing code violations, and all liens for the City of New Haven over the past four years. Each incident is recorded on color-coded index cards. Access to the file is by street address. The file is updated monthly.

#### At-Risk Building Profiles

Title Search Form

Insurance Information Request Form

Police Department Case Incident Form owner's name and address, building description, occupancy, fair market value, insurance coverage; date, cause and dollar loss of previous fires; date and amount of unpaid taxes; date, amount and issuer of liens; date and type of unabated housing code violations; and a lien quotient which compares the fair market value of the building to the amount of money owed on it.

Lists the address of an at-risk building, the owner of record, the date, type, volume and page number, and the party involved for all conveyances recorded. Also listed are the date, issuer, volume, page number and type of all recorded liens.

A letter which is sent out from the Fire Marshal to the insurance company requesting <u>pre-fire</u> insurance information on the at-risk building. The letter includes a copy of Conn. Public Act 79-367, which authorizes this transaction. Information requested is the following: name and address of insured party, parties other than the insured who have a financial interest in the named premise, expiration date of insurance contract, type and limits of coverage, payment history of the insured, and name of the agent who sold the property.

The report filled out by the Police Officer who inspects the at-risk building twice a month lists the date, time, officer's name, tenants and/or owner's names and addresses, and phone numbers, and a detailed description of the conditions found at the property which arouse suspicion or indicate a potentially hazardous condition. Fire Department Inspection Form

Master Lists

The report filled out by the Company Officers who inspect at-risk buildings once a month. Details water supply to the building, ventilation and exposure potential should there be a fire, an analysis of all fire risk factors at the building, condition of doors, exitways and fire escapes, and lists any life-threatening code violations which require immediate abatement.

Lists of all buildings in the city which have any of the four arson predicting variables. These lists are arranged in many different ways--alphabetical by address, alphabetical by owner's last name, and also by the variables present (i.e., all buildings with fires and back taxes, or all buildings with fires and liens, etc.).

# II. Internal Manuals, Guides, or Handbooks

Title	Description
AWPS Implementation Manual	A detailed description of the entire AWPS program from the research design, methodology and data analysis to the "implementation" strategies being used to prevent arson.
The Arson Squad	A description of the functions and operating procedures of the local Arson Squad, including the interaction between it and the AWPS program.
<u>Computer Information</u> <u>Guide</u>	Details the information available on the AWPS computerized data basehow to access it, what functions are available, methods for entering or deleting data factors and file update procedures.

# III. Project Reports, Descriptions, Publications

#### Title

#### Description

Summary Reports

A detailed description of all AWPS program activities each month. Includes information on data gathering and analysis, strategies for at-risk buildings, insurance contacts, inquiries, and information sharing; meetings, conferences, and changes in the monthly status of at-risk buildings. Also included are program activities for the Socio/Economic Research currently underway. "Predict and Prepare"

Magazine article which appeared in <u>Firehouse</u>, August, 1980. Describes AWPS program functions within the City of New Haven.

"A Municipal Anti-Arson Strategy"

"New Haven's Arson Alert Training Program" Magazine article which appeared in Fire Journal, March, 1980. Describes New Haven's response to its arson problem.

Magazine article which appeared in <u>The Inter-</u> <u>national Fire Chief</u>, May, 1980. Describes the arson awareness curriculum training given to all police and fire personnel.

Available from:

Ms. Doss Sauerteig Project Manager Arson Warning and Prevention System 157 Church Street, Room 307 New Haven, CT 06510

# IV. Computer Software

All the AWRS computer file transactions were written in IBM CICS Command Level COBOL.

The AWPS file was formed by using three existing City computer files, the Assessor's file, the Back Tax file, and the Fire Department incidence file. These files were adapted by the City's Data Processing Department, with additional help from an outside consultant. Material from these files which was relevant to the AWPS information system was shifted over into the AWPS file.

In addition, two new files were created to include Housing Code violations and lien records in the AWPS file. These on-line programs are used to add, update, and delete records.

All of the AWPS software programs were specially written and designed to accommodate the City's existing data system. Information regarding the specifics of the files is available upon request from:

> Mr. Harry Hubbard Data Processing Department 200 Orange Street New Haven, CT 06510 (203) 787-8313

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#### Ĉ. KNOXVILLE AIMS PROJECT

107

# **Project Reports**

1.

# Title

<u>Principles of Incendiary Crime Analysis: The Arson Pattern</u> Recognition System (APRS) Approach to Arson Information Management

Available from:

Dr. David Icove Incendiary Crime Analysis Unit City of Knoxville 800 E. Church Avenue Knoxville, TN 37915

#### II. Computer Software

#### Title

Icove/AIMS Ver 1.0 Arson Pattern Recognition System (APRS)

Arson Information Management System. Purpose: arson incident data analysis.

Available from:

Dr. David Icove Incendiary Crime Analysis Unit City of Knoxville 800 E. Church Avenue Knoxville, TN 37915

Description/Purpose

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# D. PHOENIX FIRE DEPARTMENT AIMS PROGRAM

# I. Data Collection and Coding Forms.

Title

All Investigated Fires Data Codes

All Investigated Fires Worksheet

Property Insurance Loss Report (Insurance Claim Report)

Insurance Adjusters Claim Report Data Codes

Insurance Claim Report Worksheet

Fire Prevention: Occupancy Inspection Control Data Codes

Fire Prevention: Occupancy Information Storage Data Codes

Fire Prevention Worksheet

Description

Codes for fire incident and investigation data.

Coding form to record fire incident and investigation data.

Data collection form completed by the insurance adjuster handling insurance claim.

Codes for data collected by the Property Insurance Loss Report.

Coding form to record data collected in the Property Insurance Loss Report.

Codes for occupancy inspection control data (collected by fire inspectors).

Codes for occupancy information storage data data (collected by fire inspectors).

Coding form to record occupancy inspection control and occupancy information storage data.

#### II. Software

All coding forms and worksheets are designed for data input (and information retrieval) using the Olivetti word processor (floppy disc, model TES 501). Neither special software nor computer program packages is utilized.

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# E. <u>SAN FRANCISCO EARLY WARNING SYSTEM AND</u> <u>ARSON-FOR-PROFIT STUDY PROGRAM</u>

# I. <u>Data Collection and Coding Forms</u> (for manual analysis)

Form Number	Title
-	Summary, Conclusions, and Cover Sheet
1	Physical Profile and Fire History
2	Change of Ownership, Deed, and Deed of Trust Information
2A	Liens, Tax Delinquency
ЗĄ	Code Violations
4	Information from Property Conservation Department
. <b>5</b> na – hydrifeddwe eengry, i'r ador taraethrorr	Building Permit/Alteration History and Profile
6	Civil Court Proceedings

Owner Cross Check Profile

# II. Internal Manuals, Guides, and Handbooks

Arson-for-Profit, Parcel Clearance, and Rehabilitation

Background Investigation and Prediction Manual

III. Project Reports

Arson Manual

Quarterly Report (Preliminary Results), July, 1980

Outline of Program: Available Resources, February, 1981

Available from:

Mr. Barry Goetz Arson Early Warning System San Francisco Fire Department 260 Golden Gate Avenue San Francisco, CA 94102

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#### F. BOSTON AIMS PROJECT

#### I. Publications

Title	Description	( <u>including</u> postage)
Arson Action Guide	Handbook on the arson problem and how to approach it; 40 pages with photographs.	\$ 3.00
Research: A Manual for Arson Analysis and Property Research	Comprehensive manual on how to obtain and analyze information; 289 pages.	15.00
Tools: Anti-Arson Programs and Legislation	Guide to information, organiza- tions, and legislation; 170 pages.	10.00
The Saga of Gridley	Arson-for-Profit scenario in simple cartoon format; 14 pages.	1.50
Profiles Manual	A profile on arson-for-profit.	Forthcoming
Arson Lending Library	Catalogue.	Forthcoming

### Slide Shows

II.

#### Title

"Arson and the Business of Burning"

# Description

An overview of the arson problem; 97 color slides with 18-minute cassette tape and written script.

"Fighting Fire with Facts" How to research property geared toward community groups; 117 color slides in cartoon format with 27-minute cassette tape and written script.

# Publications and slide shows are available from:

Arson Resource Center Urban Educational Systems, Inc. 153 Milk Street Boston, MA 02109 (617) 482-4477

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# G. SEATTLE AIMS PROJECT

I. Project Reports

Title

#### Description

arson incidence data.

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An Analysis of Arson in a Socio-Economic Framework (1976) Historical, statistical study of arson incidence in Seattle.

Follow-up statistical study using more recent

An Analysis of Arson in a Socio-Economic Framework: Revisited 1976-1978 (1980)

Final AIMS Project Report (forthcoming)

Available from:

Arson Alarm Foundation, Inc. 666 Bellevue Way S.E. Bellevue, WA 98004

II. Computer Software

Title

ARS.PRED

# Description/Purpose

Basic Program; Data Entry and Analysis. <u>Purpose</u>: Compare predicted arson with actual arson locations using Icove-type approach.

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Basic Program; Data Entry and Analysis. <u>Purpose</u>: Compute mean and standard deviations of arson fires per census tract.

ARS.CMPR

ARS.SUMS

Basic Program, Data Entry and Analysis. <u>Purpose</u>: Compare arson rates in census tracts that are high in factor analysis factor loadings.

Available from:

Kenneth Mathews 16223 N.E. Second Bellevue, WA 98008

FACTOR; Correlation Programs and Subprograms SPSS programs. <u>Purpose</u>: Perform factor analysis, correlation analysis. <u>Available commercially</u>.

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CENSUS

SPSS System Save File; R.L. Polk and Census and Seattle Fire Department data. <u>Purpose</u>: Provide arson and socioeconomic statistics by census tract. Specially written; not available.

Arson Incident and Loss Data. <u>Purpose</u>: Seattle Fire Incident Information for Data Analysis. Specially written; not available.

Set of tables for arson statistics. <u>Purpose</u>: Annual arson data: 1970-79. Specially written; not available.

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# CHAPTER 4

# JUVENILE FIRESETTERS: AN OVERVIEW OF PREVENTION, DIAGNOSTIC, TREATMENT, AND OTHER INTERVENTION PROGRAMS

# by

Karen Robinett Research Assistant

Clifford L. Karchmer Project Director

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I. Moti	es and Underly	ing Causes	121
Α.	Malicious Moti	Ves	122
•	l. Vandalism	• •	122
	2. Arson-for-	Profit and Extortion	123
•	3. Revenge, S	pite, Jealousy	123
,	4. Crime Conc	ealment and Diversion	124
В.	Apparently Non	-Malicious Motives	124
ан са <b>а</b>	L. Curiosity	and Retardation	124
	2. Drug or Al	cohol Abuse	124
ay taka <sup>ka</sup> tan ya s	3. Psychiatri	c Disturbance	125
	4. Non-Malici	ous Mischief	126
C.	Underlying Cau	Ses	126
II. Diag	osis and Treat	ment	127
Α.	Premises-Focus	ed Programs	129
В.	Firesetter-Foc	used Programs	130
	L. Community-	based Programs	130
	2. In-house F	ire Department Programs	131
	3. School-bas School Tea	ed Programs: The m Approach	133
ENDNOTES			137
ANNOTATEI	BIBLIOGRAPHY		139
APPENDIC	5		
I. Juve	ile Firesette	r Programs	147
	Los Angele	s County	147

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# 119

Table of Contents

Page

· . ·		· · · · · · · · · · · · · · · · · · ·	Page
	2.	Dallas Fire Department	148
÷	3.	Dallas Police Department	149
•	4.	Upper Arlington, Ohio	150
•	5 。	Mesa, Arizona	151
	6.	Seattle, Washington	152
•••	7.	Prince Georges County, Maryland	153
Nati	iona Sol	l Technical Assistance Resources: Arson, Vandalism, and Juvenile Firesetting	155

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#### CHAPTER 4

# JUVENILE FIRESETTERS: AN OVERVIEW OF PREVENTION, DIAGNOSTIC, TREATMENT, AND OTHER INTERVENTION PROGRAMS

#### I. Motives and Underlying Causes

Juvenile firesetting is a subject that has received more attention recently as the number of incendiary incidents and dollar amounts of damage have risen. Juveniles 13 to 19 years of age account for 42.8 percent of the arson arrestees in the U.S.<sup>1</sup> Until recently, the attention directed toward this broad subject seldom extended beyond media coverage of inner-city riots, where arson was mentioned along with rock-throwing and looting. With the growing realization that fire prevention entails more than fire safety education, the need to identify the factors which trigger a juvenile to set a fire, for whatever reason, has gained importance.

While distinctions with regard to motive and intention can often be difficult to draw, juvenile firesetters can be divided into two general subcategories: (a) those who maliciously disregard the potential consequences of their acts, and (b) those who are either unaware of the potentially harmful consequences of their act or do not act with maliciousness. It should be noted, however, that the issue of maliciousness is often a difficult distinction to make.

In the first general subcategory fall juveniles who are motivated by revenge, spite, jealousy, vandalism, malicious mischief, crime concealment, diversion of attention from other activities, arson-for-profit, and intimidation. The second subcategory includes juveniles motivated by curiosity, non-malicious mischief, drug or alcohol abuse, or those affected by retardation and psychiatric disturbances.

# A. <u>Malicious Motives</u>

1. <u>Vandalism</u>. It has been suggested that vandalism is the most salient motive behind juvenile firesetting. Overall estimates of fires in schools attributable to incendiary or suspicious causes range from 50 percent to 75 percent. While there are no national data on what percentage of these school fires are set by juveniles, officials tend to blame juveniles for such institutional fires. In absolute numbers, the proportion of schools experiencing fires has remained rather small. In the 1978 HEW Report to the Congress, <u>Violent</u> — <u>Schools--Safe Schools</u>, it was estimated that only 2 percent of the schools nationwide experience the 2,000 school fires set typically in a month.

In discussions with the directors of the U.S. Department of Education Regional Developmental Training Centers, it was noted that most school arsons occur in rural or suburban areas. For whatever reasons, school arsons at this point do not appear to be a major problem in urban schools.

The primary motivation behind school vandalism is usually vindictiveness--a form of revenge--where the pupil desires to strike back at teachers or administrators for some real or perceived wrong done to him by an educational institution. Excitement is cited as another motivation behind set school fires. In other situations, children vandalize a building or area out of a nihilistic enjoyment for destroying property. These children often exhibit serious emotional problems, requiring psychotherapeutic treatment which most school-based vandalism control programs cannot offer. 2. <u>Arson-for-Profit and Extortion</u>. Juveniles are reputed to have have been hired as paid "torches" in such cities as Seattle and Boston. From reports, it is not uncommon for a juvenile torch to be subcontracted by an older person originally hired by an owner or professional arsonist. The reason for the use of juveniles may be that juveniles usually incur a lesser penalty. They may also be less inclined to reveal who hired them because of the lesser threat of serious punishment.<sup>3</sup>

Youths may also demand such tribute as money or services from another under threat of setting the person's property on fire. However, data or even estimates on the frequency of this intimidation/extortion motive among juvenile firesetters are not available. It is reported to be significant where juvenile gangs employ it as a means to assert dominance over "territory" or to frighten a recalcitrant owner into paying tribute.

3. Revenge, Spite, Jealousy. Revenge-motivated fires are set by youths who have characteristically experienced rejection or failure in peer group, social, family, or other interpersonal settings. In the first major study on firesetting by children, this behavior was seen as a direct expression of aggression against adults who were perceived as depriving and rejecting.<sup>4</sup> Drs. Charles and Esther Brudo are practicing clinical psychologists in California who have treated both juvenile and adult arsonists, and who have studied the broad issue of retribution motives in firesetting. They were instrumental in the creation of the Fire Service and Arson Prevention Committee of the California Psychological Association, on which they both now serve. The Committee is composed of psychologists and fire service professionals, and is responsible for developing the Los Angeles County Juvenile Firesetter Program.

4. <u>Crime Concealment and Diversion</u>. Youths may set fires in order to conceal another crime which has been committed, such as burglary, or to divert attention from other illegal activities. There are no data available on the frequency of this type of motive among youths.

#### B. Apparently Non-Malicious Motives

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1. <u>Curiosity and Retardation</u>. Juvenile firesetters motivated by curiosity include very young children who, because of inexperience, are not aware of the potential hazards of fire; and older children who, because of a psychological or retardation problem, share the younger child's lack of awareness. Curiosity is one of the most benign yet unintentionally destructive factors behind juvenile firesetting. A number of fire safety education programs at the pre-school level are reportedly successful in allowing the child to channel his or her curiosity in a safe manner by exhausting an interest in striking matches.

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For example, the Upper Arlington, Ohio, Fire Division offers a pre-school program at day care centers which features puppet characters who discuss the dangers encountered when playing with matches and fire. During the summer months, the firemen visit playgrounds where summer programs are held and explain fire safety practices to the children. The fire department also has an elementary school fire-safety program which focuses on the first and second graders. It is recommended that comprehensive fire-prevention programs also include in their target audience mentally retarded youngsters.

2. <u>Drug or Alcohol Abuse</u>. Children who set fires because they are under the effects of either drugs or alcohol usually require treatment designed to eliminate such dependence. Many communities maintain halfway houses or similar drug counseling

programs to address this need. A number of school systems also provide drug counseling. The federal Department of Education Regional Training and Development Centers support training programs for school counselors. These programs focus on drug abuse and its accompanying problems, but are not specifically devoted to firesetting behavior.

3. <u>Psychiatric Disturbance</u>. The term "pyromaniacs" is a broad (and now generally archaic) term used to describe those firesetters who "set their fires for no practical reason and receive no material profit from the act, their only motive being to obtain some sort of sensual satisfaction."<sup>5</sup>

In one study of a compilation of juvenile motive frequencies, pyromania was judged the motive behind 14 percent of the acts in that sample. Most of the professional literature on firesetting deals with "pyromania" or psychological disturbance because of the historical trend, set by Sigmund Freud, of considering firesetters as seriously disturbed individuals, for whom the setting of fires served some repressed sexual need.<sup>6</sup>

Psychotic firesetters reportedly also set fires for suicidal purposes. Their motives are apparently delusional in character or manifest bizarre behavior during or immediately after the firesetting.<sup>7</sup>

Juvenile pyromaniacs and psychotic firesetters require treatment by highly trained specialists, such as licensed psychotherapists (i.e., psychologists, psychiatrists). Fire departments which maintain juvenile firesetter programs may through necessity refer these seriously disturbed children to counselors in the community who are not licensed, due to the parents' inability to afford competent treatment. Obviously, 4. <u>Non-Malicious Mischief</u>. Most children participate in some form of mischief in the course of growing up. One researcher who has examined this particular issue is Dr. James Breiling, a psychologist with the Center for Research on Crime and Delinquency of the National Institute of Mental Health. Breiling has noted that enrollment of firesetters in formal counseling programs may do more harm than good if the child is merely acting out a form of "growing pains" by engaging in one-time or occasional firesetting. However, where firesetting acts are repeated the need for professional assistance of some kind becomes a necessity.

# C. <u>Underlying Causes</u>

by FBI agent Anthony Rider, the following general characteristics were noted among many juvenile firesetters:

They appear to come from disruptive, frustrating, harsh, broken or unstable home environments. Often their families are large and within the lower socioeconomic level; it is not uncommon to find one or both parents frequently absent. Some studies have noted that repetitive child firesetters are often middle children. It has been frequently noted that firesetting children come from father-absent and mother-dominated . . . environments.<sup>8</sup>

Breeland noted in a 1979 compilation of studies of juvenile firesetter families that the fathers tended to be less interactive with the families than were fathers of non-firesetting (and otherwise presumably normal) children. One conclusion Vreeland drew as a result of this observation was that a major goal of any intervention program directed at the juvenile firesetter should be to enhance the role of the father.

Youthful firesetters share a number of problems other than those associated with home environments, including theft involvement, school hyperactivity and truancy, and aggressive behavior in school and on the street.<sup>9</sup> One problem that does not appear to beset juvenile firesetters is that of low intelligence: firesetters seem to be of average intelligence or above. Rider addresses this issue, noting that:

. . . although a large number of studies have identified intellectual difficulties among firesetters, they have not conclusively demonstrated that intellectual impairment or low basic intelligence is a precursor to firesetting.<sup>10</sup>

II. Diagnosis and Treatment

The purpose of this section is to provide information on the types of diagnostic and treatment programs that deal with juvenile firesetters. While an understanding of the motives behind an act of juvenile firesetting is important, a juvenile firesetter program apparently need not focus on specific motives. Rather, in those programs which have been reviewed (none has been formally evaluated), a focus on identifiable underlying factors appears to work adequately.

After reviewing the types of programs currently in operation, it seems that some purportedly successful programs have focused on the child's environment and his or her personality characteristics, rather than on any particular motive. Many of the programs that are environment- or personality-focused have experienced staffing and budgetary limitations and therefore had to rely upon lay people, such as firefighters, as well as on the occasional use of professional psychologists or psychiatrists and diagnosticians, when the latter have been available. Such lay counselors do not receive extensive training in diagnosis and counseling techniques, they may be more comfortable looking for more overt symptoms (i.e., family dissolution or youthful rebelliousness) to explain the juvenile's actions, rather than some more basic but obscured cause. They also are forced by circumstances to perform their functions under severe time limitations. It has been noted that the isolation of a particular firesetting motive may require weeks, even months, of investigative work, if this can be accomplished at all.<sup>11</sup> Therefore, the issue of the adequacy of programs run by lay and paraprofessional personnel remains a somewhat open question.

For school-based programs, resource limitations normally require that the programs focus on a variety of youthful offenders. (i.e., truants, vandals, and disruptive students) rather than exclusively on firesetters. This often means that all offenders, irrespective of their problem, must be grouped together for counseling. If a division is made, it is made on the basis of similar background and personality characteristics rather than by individual motivation or offense. One researcher has suggested that there are no clear-cut differences between criminals "who set malicious fires and those who do not; the similarities are more striking than the differences."<sup>12</sup> Therefore, the inability to treat all firesetters separately does not necessarily seem fatal to a treatment program which does not focus on individual motives.

Early identification techniques provide the intervenor or counselor with a method for determining which children who have set one fire are likely to go on to become multiple firesetters. This approach is useful in that it isolates those

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children who are not likely to repeat the act, and therefore do not require sustained and intensive counseling, from those who could benefit from such counseling.

Early identification is made possible by determining which characteristics are shared by both single and multiple firesetters. Several of the programs, reviewed below, employ some early identification techniques. For example, a local fire department's juvenile firesetter program usually obtains its clients through either parental referral or referral by a fire investigator at the scene of the incident. If it appears to the investigator that the fire was only an accident or that the child was involved in a form of non-malicious mischief, the investigator will usually not refer the child to the counseling service. There do not appear to be any formal guiding principles which investigators follow when making the determination as to whether the child is likely to repeat the act and requires therapy. Again, this lack of intake and diagnostic uniformity is an important issue that would appear to deserve appropriate evaluative attention.

#### A. Premises-Focused Programs

Premises-focused programs are designed to remove the opportunity for anyone, including juveniles, to set fires. Most such programs are employed in schools, since these are the targets of a substantial number of presumably juvenile fires and because there is a potential for great monetary damage. One security method which has proven to be highly effective in preventing arson is a fire alarm system which is interfaced with a burglar alarm system. This way, the monitoring station of the burglar alarm system will be alerted if the fire alarm system has not been turned on. If that system is equipped with an audio alarm system, the latter will also pick up sounds emitted by smoke detectors. This multi-system was credited

with responsibility for reducing arson in one Virginia school district by 77 percent.<sup>13</sup> However, one problem with this type of prevention program is that a large number of schools do not have burglar alarms. This seems to be so because schools rarely contain materials expensive enough to warrant the cost of installing a burglar alarm system. Other deterrent devices are available, however, and several are less expensive than burglar alarms. Joseph Grealy outlines these in his book, <u>School Crime and Violence: Problems and Solutions</u> (Fort Lauderdale, FL: F.E. Peters Co., 1980).

#### B. Firesetter-Focused Programs

#### 1. Community-based Programs.

#### Oregon Research Institute, Social Learning Center (OSLC)

The OSLC is located at 220 East 11th Avenue, Eugene, Oregon 97401; telephone (503) 485-2711. Firesetting children are referred to the Center for treatment by either community agencies or parents. In most cases, the identification of the firesetting problem comes from the parents.<sup>14</sup> For further information, contact either Dr. Gerald Patterson or Dr. John Reid at OSLC.

#### Mentor, Inc.

Mentor, Inc., located in Cambridge, Massachusetts, is a residential program which offers three separate stages of involvement by staff members. The Clinical Intake Team determines which stage the youth should enter after an assessment of the youth's particular needs. The youth may move to any of the other stages according to the recommendations of the team.

Stage I is a one-on-one involvement between the mentor and the youth, with the mentor working full time with the youth. The child is supervised 24 hours a day and receives individual evaluation and therapy and behavior modification. Stage II (which provides two mentors for each youth) was designed for youths whose demands far outweigh the capabilities and time of one mentor. Stage III provides a two-mentor-to-three-youthsratio. During this stage, there is an emphasis on cooperative goal-setting.<sup>15</sup> For further information, contact E. Byron Hensley, Director, Mentor, Inc., 52 First Street, Cambridge, Massachusetts 02141; telephone (617) 868-4000.

2. In-house Fire Department Programs. Five fire department and one joint fire/police department juvenile firesetter programs were reviewed for this paper. Specifics on each program can be found in Appendix I. The programs studied are located in Dallas, Texas; Upper Arlington, Ohio; Los Angeles, California; Seattle, Washington; Mesa, Arizona; and Prince Georges County, Maryland. The Prince Georges County program was the only one studied which did not offer an in-house counseling program. A majority of the programs were initiated in the 1970's. All but one of the programs (Dallas) deal exclusively with firesetters; the Dallas program involves other family members as well.

The youths are normally referred to the fire department for counseling either by their parents or an investigator at the scene of the incident. The counselors in all the in-house programs are usually firefighters (not arson investigators) who have received training in counseling from either other firefighter-counselors or an outside consultant. Some of the departments have developed interviewing guidelines for their counselors to follow. In the majority of the programs reviewed, the individual child's counseling treatment will last for less than four weeks. The Dallas program is the only one which offers a long-term (i.e., six-month) program for children who require lengthy treatment.

All of the programs refer children with serious emotional problems to an outside mental health agency or private mental health professional. In the departments which utilize interviewing manuals, severe psychological problems are supposed to be detected by the counselor through the use of techniques set forth in such manuals. Two of the programs, Dallas and Los Angeles County, have formal follow-up procedures for use after a child has completed the counseling process.

The self-reported success rates of the programs seem not only to be a measure of the effectiveness of particular counseling methods but also are affected by the number of youths involved and certain intangible characteristics, such as the personality of the individual youth and parental involvement after the counseling has been completed. Therefore, the success rates of the different programs cannot be compared fairly in order to determine the most effective one studied.

The Los Angeles County program resulted from a workshop sponsored by the California Psychological Association which brought together firefighters and psychologists to deal with the juvenile firesetter problem. The workshop later grew into the Fire Service and Arson Prevention Committee of the California Psychological Association. The members of the committee include both fire service personnel and psychologists. The association's pilot project, the Los Angeles program, is being implemented in other fire departments in the state, and resulted in a manual on juvenile firesetters, available from the U.S. Fire Administration. For example, the Fountain Valley, California, Fire Department has adopted the program. For further information regarding that replication, contact Fire Marshal Lynne Michaelis in Fountain Valley, at (714) 963-8321.

. 132

The Dallas program represents a cooperative effort between police and fire departments. One interesting facet is that the police department not only evaluates the child during the follow-up program but also evaluates the firefightercounselor. Counselors who do not seem to care about the child's welfare become known to the police department and further referrals to that counselor are terminated.

There were three problems identified with respect to the Dallas program: (1) firefighter-counselors are often transferred from station to station; (2) some firefightercounselors have no children to counsel because of the location of their assigned station; and (3) swing shifts make some =counselors unavailable to the child.

The program in Seattle employs a non-firefighter civilian counselor. The counselor is working with the county mental thealth agency to develop diagnostic guidelines, which are expected to be finalized in mid-1981.

In the Prince Georges County, Maryland, program, the fire department acts as a referral service in order to match up firesetting youths with trained professional counselors. The fire department does not attempt to counsel the children. Thus, in a community where professional mental health services are widely available to all who require such services, this could be a successful, as well as inexpensive, program for a fire department to adopt.

3. <u>School-based Programs: The School Team Approach</u>. The LEAA Office of Juvenile Justice and Delinquency Prevention (OJJDP) operates a national technical assistance project on school vandalism and violence. This program provides on-site residential training and supportive post-training technical assistance to teams of school and community personnel. These teams are formed for the purpose of dealing with alcohol and drug abuse and the school crime and related disruption problems. The School Team Approach rests on these assumptions:

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There is no problem with one standard solution that can be packaged by experts and distributed for use by schools everywhere;

- Solutions to local problems can be best developed by the persons most immediately concerned with them. They understand the local setting and its needs;
- Local people can be given the skills necessary for them to implement their solutions to local problems;
  - A team of persons can be more effective than individuals working alone;

Effective programs require change, and lasting change can only come about when all groups of persons concerned with a problem are involved in the change effort.

Based upon problems identified in proposals submitted by applying school districts, an independent review board selects which schools should participate in the training program. Several of the proposals submitted have mentioned arson as a problem. This is partly due to the fact that the focus of the training centers has been on <u>urban</u> schools where vandalismrelated arson has not been perceived, until very recently, to be a serious problem. Some training center directors indicated that, on the basis of available information, school arson seems to be more prevalent in rural and suburban institutions than in urban schools. However, arson was identified as a problem in proposals submitted by schools in Bristol, Pennsylvania; Newark, New Jersey; and in the Miami metropolitan area. Seattle also reports a growing incidence of school arsons.

> The technical assistance center does not offer a specific, tailor-made program for combatting arson; rather, it offers a

broad approach used to prevent vandalism in general. These methods are believed to apply to arson prevention as well.

The technical assistance project can be contacted as follows:

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James Dahl, Project Director National School Resource Network Center for Human Services 5530 Wisconsin Avenue, N.W. Washington, DC 20015 (800) 638-8090 (toll-free)

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#### Endnotes

137

<sup>1</sup>Anthony Rider, "The Firesetter: A Psychological Profile," in <u>FBI Law Enforcement Bulletin</u>, June, 1980, p. 8 (additional installments in July and August 1980 issues).

<sup>2</sup>U.S. Department of Health, Education, and Welfare, National Institute of Education, <u>Violent Schools--Safe Schools</u> (Washington, D.C.: U.S. Government Printing Office, 1978).

<sup>3</sup>Jan Schueller, <u>Juvenile Arson</u> (Seattle: Center for Law and Justice, University of Washington, 1979), p. 6.

<sup>4</sup>Gordon A. Heath, et al., "Childhood Firesetting," in <u>Canadian Psychiatric Association Journal</u>, June, 1976, p. 230.

<sup>5</sup>Robert G. Vreeland and Marcus B. Waller, <u>The Psychology</u> of <u>Firesetting</u> (Washington, D.C.: Center for Fire Research, National Bureau of Standards, 1978), p. 6.

<sup>6</sup>Schueller, <u>op. cit.</u>, p. 5.

<sup>7</sup>Vreeland, op. cit., p. 8.

<sup>8</sup>Rider, op. cit. (July, 1980).

<sup>9</sup>Vreeland, <u>op. cit</u>., p. 40.

<sup>10</sup>Rider, <u>op. cit</u>., p. 8.

<sup>11</sup><u>Ibid</u>., p. 12.

12vreeland, op. cit., p. 40.

13Joseph Grealy, <u>School Crime and Violence</u> (Fort Lauderdale, FL: F. E. Peters Co., 1980), p. 160.

<sup>14</sup>Robert G. Vreeland and Marcus B. Waller, "Social Interactions in Families of Firesetting Children." Paper presented at the Annual Meeting of the American Psychological Association, Montreal, Quebec, 1980, p. 3.

<sup>15</sup>Mentor, Inc., <u>Mentor, Inc. Individual Residential</u> <u>Services: A Description of the Cluster Program</u> (Cambridge, MA: Mentor, Inc., 1979).

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139

#### Annotated Bibliography

 School Crime: The Problem and Some Attempted Solutions. U.S. Department of Justice. National Institute of Law Enforcement and Criminal Justice, 1979.

Booklet written for school administrators. General information on school crime and ways to combat it. Does not mention arson specifically. Briefly reviews the five approaches to the origins of school crime and vandalism: hardware; preventive; corrective; interagency; and integrative.

2. Interviewing and Counseling Juvenile Firesetters: The Child Under Seven Years of Age. Manual developed for USFA, by the Fire Services and Arson Prevention Committee, California State Psychological Association; Capt. Joseph Day, 'Los Angeles County Fire Department, Project Manager; Kenneth R. Fineman, Chief Investigator, November, 1979. (Available from U.S. Government Printing Office, Washington, D.C. 20402; Stock No. 064-000-00001-2.)

Manual designed for use by fire service personnel. Goals are to teach fire service personnel how to recognize psychological problems in children that may lead to recurrent firesetting; interview firesetting children and their families; educate "curiosity" firesetters and their families on the dangers of this behavior; recognize those firesetters and their families who require mental health assistance; and locate possible resources in the community and make such referrals.

3. "Arson in Schools," by John Gardner. <u>Security Gazette</u>, No. 2-75, 1975, p. 56.

Brief overview for the lay audience of the school arson/ vandalism problem. Provides some general statistics on the number of school fires per year and dollar amount of damage.

4. "Model School Security System Cuts Crime," by Lucius W. Burton. <u>Security World</u>, June, 1975, p. 12.

Discusses the Alexandria, Virginia, school district's anti-arson, burglary, and vandalism system. The school district employs a special audio intrusion detection system which can be adapted to the school's public address console. Also employs video system and telephone "hotline" to police. Losses due to vandalism, arson, and theft were reduced from \$109,000 in 1971 to \$50,000 for 1974.

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5. <u>The Dimensions of Juvenile Arson and False Fire Alarms for</u> <u>the Urban Areas of San Diego</u>, by Robert Vernon. The Urban Observatory<sup>1</sup>, University of San Diego, November, 1972.

Data on youths involved in fire offenses were collected and analyzed to determine trends and generalities, in order to formulate meaningful programs for the target population of junior high males. The report avoids social science jargon. Some of the conclusions drawn in the report are: (1) the problems of juvenile arson are not limited to any one socio-economic group or ethnic category; (2) most of the offenses occur during the time when school is in session; and (3) a large percentage of the older children have social adjustment problems that have been identified by school authorities. Specific recommendations are made for an effective fire prevention program.

6. "The Use of Stimulus Satiation in the Elimination of Juvenile Fire-Setting Behavior," by Ralph Welsh; in Anthony Graziano, ed., <u>Child Without Tommorrow</u> (Elmsford, NY: Pergamon Press, 1974).

Rates the effectiveness of satiation (allowing juvenile firesetters to light matches in controlled environment) as a therapeutic technique.

7. "Childhood Firesetting," by Gordon Adair Heath, William F. Gauton, and Vaughn A. Hardesty. <u>Canadian Psychiatric</u> <u>Association Journal</u>, Vol. 21, No. 4, June, 1976.

Review of the major psychological studies on the juvenile firesetter. Written for a social science readership.

 A Profile of the Juvenile Arsonist, by Scott R. Coplan. Center for Law and Justice, University of Washington, Seattle, 1979.

This report identifies factors which would distinguish between juvenile arsonists, juvenile delinquents who have committed other crimes, and juveniles who have not officially committed any crimes as a comparison/control group.

9. Upper Arlington Fire Division's Approach to Juvenile Firesetting, by Lt. John C. Haney, City of Upper Arlington, Fire Division, 3600 Tremont Road, Upper Arlington, OH 43221, June, 1978.

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Paper which discusses the fire prevention program instituted at local schools and the fire department's program of interviewing and counseling juvenile firesetters. Between 1963 and 1967, 360 juveniles were treated with a 3 percent repeat offender rate. Written for the lay audience.

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# 10. Intervention with Juvenile Firesetters, by Anne Croskey and Daniel Davis. Upper Arlington, Ohio, April, 1979.

A manual prepared as part of the training series by the Upper Arlington Fire Division, Bureau of Fire Prevention. Designed for use by fire department personnel. Discusses what causes a juvenile to become a firesetter and interviewing techniques developed by the fire department to deal with such individuals.

11. Firesetter Interview Instrument (Draft Manual), by Anne Croskey and Daniel Davis, April, 1979, Upper Arlington, Ohio.

Manual designed for use by fire prevention officers to assist with determining the need for mental health evaluation or treatment of the juvenile interviewee.

12. Crime and Disruption in Schools. National Institute of Law Enforcement and Criminal Justice, U.S. Department of Justice. Compiled by Robert Rubel, National Criminal Justice Reference Service, January, 1979.

Bibliography of studies and articles on school violence and its causes and prevention. Divided into four components: (1) overview of the problem, (2) student misbehavior and traditional discipline, (3) school programs to combat violence, and (4) school security. Includes numerous articles which would be relevant to a study of school vandalism/arson, although arson was not treated as a separate topic.

13. The School Team Approach. Phase 1 Evalution: Executive Summary. Prepared by the Social Action Research Center, San Rafael, California, January, 1980.

Report of the first year evaluation of a program designed to reduce school crime and disruption. Discusses those characteristics of a school setting which promote a safe environment. Written for the lay audience. Does not discuss school arson in particular.

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14. School Crime and Disruption: Prevention Models. National Institute of Education, U.S. Department of Health, Education, and Welfare (now Department of Education), Washington, D.C., June, 1978.

Collection of 17 papers which suggest practical approaches to combatting school crime. Of major use to school administrators and planners. None of the articles deals specifically with arson.

15. <u>Violent Schools--Safe Schools.</u> The Safe School Study <u>Report to the Congress</u>, Vol. I. U.S. Department of Health, Education, and Welfare (now Department of Education), National Institute of Education, Washington, D.C. 20202, January, 1978.

The Safe School Study was undertaken by the National Institute of Education in response to a Congressional request in 1974 that HEW determine the number of schools affected by crimes of violence, the types and seriousness of those crimes, and how school crime could be prevented. The study utilized a mail survey of schools, a site survey, and case studies. Arson in particular is mentioned only briefly, on pages 33 and 48 through 57.

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16. Youthful Fire-Setters: An Exploratory Study in Personality and Background, by Ellen Y. Siegelman and William S. Folkman. U.S. Forest Service, Pacific Southwest Division, Berkeley, CA. Research Note PSW-230, 1971.

Study of the personality and background differences between single and multiple incident firesetters. It was designed to be used as an early identification tool in determining which firesetters are likely to repeat the act.

17. Fireman Counselor Manual of Operation, by the Dallas, Texas, Fire and Police Departments, 1976.

This manual describes the firefighter-counselor program in Dallas and was written for its own employees. It discusses the Counselor's role and what types of treatment can be utilized for the benefit of the juvenile offender. The manual also outlines the procedure followed upon the juvenile's referral to the counseling program. 18. The Psychology of Firesetting, by R. G. Vreeland and M. B. Waller. U.S. Department of Commerce, National Bureau of Standards, Center for Fire Research, 1978, NBS-GCR-79-157.

This study organizes the current knowledge about the psychological characteristics of firesetters into four major categories: antecedent environmental conditions, organismic variables, actual firesetting behavior, and the consequences of firesetting.

19. School Crime and Violence: Problems and Solutions, by Joseph I. Grealy (Fort Lauderdale, FL: F. E. Peters Co., 1980).

Mentions school arson episodes around the country. Includes suggestions for making schools more secure against arson.

20. "Juvenile Firesetters: Do the Agencies Help?" by Stuart Fine, M.D., and Don Lourie, M.D. <u>American Journal of</u> <u>Psychiatry</u>, April, 1979.

The researchers reviewed the records of the Vancouver, British Columbia, fire marshal, juvenile court, and psychiatric clinic to assess their success in controlling firesetting. They concluded that the agencies were unable to coordinate their efforts and were largely unsuccessful in reducing firesetting.

21. Mentor, Inc. Individual Residential Services (A Description of the Cluster Program) by Mentor, Inc., Cambridge, Massachusetts, 1979.

Describes the Mentor operation. Does not include an evaluation of the program's impact on troubled youths, or discuss firesetting in particular.

22. "Social Interactions in Families of Firesetting Children," by Robert G. Vreeland and Marcus B. Waller. University of North Carolina at Chapel Hill. Paper presented at Annual Meeting of the American Psychological Association, Montreal, Quebec, 1980.

Studies the families of juvenile firesetters with a focus on the parents' ability to interact with the child.  23. "A Guttman Scale of Children's Coercive Behaviors," by
G. R. Patterson and B. M. Dawes. Journal of Clinical and Consulting Psychology, 1975, 43(4):594.

Presents the results of a study of children's disruptive patterns and discusses the likelihood of a particular pattern leading to other forms of behavior.

24. "The Firesetter: A Psychological Profile," by Special Agent Anthony O. Rider, FBI. Three-part series in FBI Law Enforcement Bulletin, Part I, June, 1980; Part II, July, 1980; Part III, August, 1980.

Presents psychological profiles of apprehended and/or incarcerated arsonists. Very comprehensive overview.

25. Juvenile Arson, by Jan Schueller. University of Washington, Center for Law and Justice, Seattle, 1979.

Review of the juvenile firesetter research that has been conducted in the last decade.

26. Juvenile Delinquency Prevention: A Compendium of Thirty-Six Program Models, by J. Wall, J. D. Hawkins, D. Lishner, and M. Fraser. University of Washington, Center for Law and Justice, Seattle, 1980.

Monograph presents 36 juvenile delinquency prevention program models. Includes a prevention program matrix to assist readers in identifying programs of interest on the basis of key characteristics. Does not focus specifically on arson.

27. "Playing with Matches: Children and Fire," by Ditsa Kafry in <u>Fires and Human Behavior</u>, edited by P. Canter (New York: John Wiley & Sons, Ltd. 1980), pp. 47-61.

Presents the results of a study conducted in Berkeley, California, of fire behavior and knowledge of 5- to 10-year-old boys who had not been labeled as firesetters.

28. "Fire-play and Fire-setting of Young Children," by Ditsa Kafry. Department of Psychology, University of California, Berkeley. Paper presented at the Symposium: "Firesetting in Children: A New Look at an Old Problem." American Psychological Association Convention, Montreal, Quebec, 1980. An observation of the firesetting behavior of "normal" children. The definition of fire-play was extended to include use of any fire materials, notably: matches, lighters, and firecrackers, without parental permission or supervision.

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#### Appendix I

147

# Juvenile Firesetter Programs

#### QUESTIONS:

1. When was program established?

2. Who are the counselees?

3. Who are the counselors?

4. What is the counseling procedure?

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5. Are outside referrals made?

6. Is there a follow-up program?

7. What is the success rate?

#### Los Angeles County Program

Contact:.

Capt. Joseph Day L.A. County Fire Department P.O. Box 3009 Los Angeles, CA 90051 Telephone (213) 267-2461

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1. Approximately 1975.

2. The counselees are juvenile firesetters. They are referred to the program either by concerned parents or by a firefighter at the scene of the incident.

3. There are seven firefighter counselors who have been trained by the fire department to counsel juvenile firesetters. They utilize a manual on interviewing and counseling techniques developed by Joseph Day and the other members of the California Psychological Association's Committee on Arson Prevention.

4. The youths come in for counseling two to three times. The counselor follows guidelines established in the manual mentioned above.

5. Referrals to mental health agencies or private psychologists/psychiatrists are made if child exhibits serious emotional problems. Three questionnaires in the manual are designed to be administered as diagnostic instruments to uncover such problems.

6. The counselor calls every counselee after the youth has completed treatment to check on the youth's progress.

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7. The Los Angeles program, combined with an in-school education effort, has reduced the total number of juvenile firesetting incidents from 169 to 20 in 1979.

#### Dallas Fire Department Program

•	Chief John MacKenzie
	Youth Services Program
•	Dallas Fire Department
	2014 Main Street
	Dallas, TX 75201
	Telephone (214) 670-4553
•	

1. 1976.

Contact:

2. The fire department counsels juvenile first-offender firesetters, irrespecive of the type of offense committed. The youths are referred by the Dallas Police Department if the following three conditions are met: (1) the child lives within one mile of a fire station, (2) there is a firefightercounselor available at that fire station, and (3) the child has need for a "father figure." To this date, only males have been counseled by the fire department. With female firefighters now joining the staff, female offenders will also receive counseling. Parents are counseled by the police department and not the fire department.

3. There are 105 firefighter-counselors. They have received training in counseling by police department personnel who were initially trained by a private consulting firm. The counselors utilize an interviewing manual developed jointly by the Dallas Police and Dallas Fire Departments.

4. The fire department counselors are utilized as "big brothers" and tutors. The youth visits his counselor once a week until counseling seems no longer necessary.

5. Children with severe emotional problems are referred to the Dallas County Mental Health Association.

6. There is no follow-up program within the fire department. There is one within the police department.

7. There is a reported 90 percent success rate (i.e., 10 percent recidivism rate) with juvenile firesetters participating in this program.

## Dallas Police Department Program

Contact: Ran

ntact: Randy Powell, Supervisor Juvenile Counseling Program Dallas Police Department Dallas, TX 75201 Telephone (214) 670-5380

#### 1. 1973.

2. Juvenile first-time and repeat offenders, irrespective of offense, are treated, plus "problem children" who have not committed any offense but are causing consternation to their parents and teachers. Some youths are assigned to the counseling service after arrest. Others are referred by their parents. Most juvenile firesetters are assigned to the fire department's counseling program.

3. There are seven counselors and two police officer supervisors. Counselors are policemen who have been trained to counsel by other policemen. The original police-counselors received their training from a local consulting firm (Robert Corkoff and Associates) that was hired to develop a juvenile counseling program for the police department. The policecounselors receive 200 hours of training in counseling techniques from their policemen instructors.

4. The youth is assigned to either a long-term (once-a-week counseling for six months) or a short-term (one two-evenings-aweek session) program, depending upon a determination of the needs of the child and whether the child is a repeat offender. The two-evening sessions involve group discussions with youths and their parents and an educational film the police department developed. There are 56 youths involved at any one time in the long-term program. The short-term program involves 100-125 youths per month.

5. Outside referrals to State Mental Health Department, private physicians, and local hospitals are made for youths with serious emotional problems.

6. There is a follow-up program to check on the child's progress. The police department also checks on children referred to the fire department for counseling.

7. The police department has experienced a 20 percent recidivism rate regarding participants in this program, with subsequent offenses not broken down by particular offense.

# Upper Arlington Program

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Contact:	Lt. John Haney
	Upper Arlington Fire Division
	3600 Tremont Road
	Upper Arlington, OH 43221
	Telephone (614) 457-5080, ext. 233

## 1. 1963.

2. The counselees are juvenile firesetters and their parents. The youths are referred either by their parents or the fire suppression officer at the scene of the incident.

3. There are four counselors who are fire inspectors and are assigned to each of three fire units. In this, Upper Arlington has a counselor on duty each day for 24 hours.

4. The department follows a three-tiered approach to counseling the juvenile firesetter. First, the parents are interviewed to discover their perceptions of the firesetting incident. Second, the youth is interviewed to discover his perceptions. Third, the parents and child are involved in a discussion with a fire inspector-counselor of the consequences of the firesetting incident. A manual designed for the fire inspector-counselor covering interviewing techniques was developed by the local Children's Mental Health Center and the Columbus Psychological Services Organization. Interviews are conducted in the youth's home if the youth is two to three years old. Otherwise, they take place at the fire station.

Some youths are placed in a Fire Awareness Program and required to visit the Upper Arlington Fire Bureau monthly for continuing fire-safety education. The education program includes essay writing on fire safety subjects and/or maintaining a small scrapbook on fires the media has publicized. Since most fires are caused by carelessness the youths are made aware of the need for fire safety.

5. If serious emotional problems are manifested by the youth during the interview, he or she is referred to a mental health worker or the family physician. A manual covering interviewing techniques which uncover such emotional problems was also developed for use by the fire inspector-counselor.

6. Follow-up appointments are made with the youth where necessary.

7. There were 11 repeat firesetters out of the 515 treated since the program's inception.

#### Mesa, Arizona, Fire Department Program

Contact:

Captain Mel Epps Fire Prevention Officer Mesa Fire Department Mesa, AZ 95201 Telephone (602) 834-2102

#### 1. 1974.

2. Juvenile firesetters and their associates. Youths are referred by parents or by firemen at the scene of the incident.

3. There is one firefighter-counselor and four inspector-counselors. They receive no formal training in counseling. New staff members sit through the counseling sessions as observers. They are expected to acquire necessary skills by observing an experienced inspector for one or two sessions'.

4. Interviewing is done with both parents and child at the local fire station. The in-house program is primarily educational in focus. After the interview, the program consists of three separate visits to the fire station over a three-week period. Juveniles must be accompanied by at least one parent or guardian. At the first visit, the staff attempts to get the juvenile to admit to setting the fire. A brochure is distributed and the juvenile is assigned "homework" regarding fire hazards in his or her home. At the second session, the homework is reviewed (and reassigned, if of poor quality) and a slide presentation and accompanying discussion on fire is given (72 slides). The juveniles are asked to make posters on fire prevention. The third visit consists of a "graduation" ceremony complete with a certificate and a photograph with a high-level fire official.

5. A private psychologist who does work on a consulting basis for the City of Mesa has an agreement with the Juvenile Firesetters program to provide one free evaluation interview with firesetters. The juvenile is not compelled to do so, but parents are strongly encouraged to have their children evaluated if the staff so recommends. The psychologist has agreed to recommend other practitioners if a need for further counseling is indicated, but future services are not offered unless parents specifically request them. The names of juvenile firesetters who are totally uncooperative are referred to the Mesa Police Department as "potential problems" for future firesetting. Subsequent action may involve placement in a juvenile detention house. 6. There is no follow-up program. The fire department is alerted when one of their former counselees has repeated the offense, however.

7. The department reports a 99 percent success rate.

# Seatcle Fire Department Program

Contact:

David Watanabe, Counselor Arson Task Force Seattle Fire Department 301 Second Avenue South Seattle, WA 98104 Telephone (206) 625-4096

1. 1971.

2. Juvenile firesetters referred by parents, school administrators, or investigators at scene of incident.

3. There is one in-house counselor available at the fire department arson unit headquarters. He is a civilian, not a firefighter. He has attended various seminars on interviewing and counseling juvenile firesetters.

4. The "less difficult" cases are handled by the staff in one or two counseling/education sessions. The approach used varies from "tough" to "soft," depending on characteristics of each case.

An interview form is not followed. Strict interview guidelines are in the process of being developed by Mr. Watanabe and the Family and Child Services of King County in Seattle. These guidelines are to be followed by the counselor when determining whether a child should be referred to a mental health agency.

Parents and the child are interviewed together. The primary criteria used in the diagnosis are the circumstances of the fire and past incidents of firesetting.

5. Family and Child Services (FCS), a Seattle public agency, has several counseling locations throughout the city. Approximately 60 percent of all juveniles interviewed by the Juvenile Firesetter Program staff are referred to this agency. Although the decision whether to attend counseling with FCS is purportedly voluntary, non-compliers are notified of the possible alternative of referral to Juvenile Court. According to the staff of the Firesetter Program, a juvenile is usually seen about three times by FCS.

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6. A follow-up program has been restricted to those juveniles referred to Family and Child Services (FCS). The fire department is unfamiliar with the evaluation criteria used by the FCS. The fire department is alerted when one of its former counselees has repeated the offense, however.

7. The FCS claims a 95 percent success rate. Mr. Watanabe has dealt with 45 juvenile firesetters in the past two years. He has had only one repeater.

#### Prince Georges County, Maryland, Fire Department Program 🦟

Contact:

Nancy Landes, Registered Nurse Prince Georges County Fire Department Brentwood, MD 20722 Telephone (301) 699-2960

#### 1. 1978.

2. Juvenile firesetters who have been referred by parents are involved in this program. Also, a fire service officer at the scene of the incident may suggest to the parents that the child be brought in.

3. The staff consists of a registered nurse and an arson investigator. Staff training consists of attendance at USFA seminars on juvenile firesetter programs. Interviewing and assessment of the juvenile's problem are considered to be the most important aspects involved in referral.

4. No in-house counseling is provided. The youths and their parents are interviewed separately. After the interview, referrals are made to local agencies when counseling is deemed necessary.

5. Two alternatives are available: (1) Hamilton Family Health Clinic which offers family and child counseling, and (2) Children's National Medical Center in Washington, D.C. This facility will accept referrals on an emergency basis so the more troubled juvenile firesetters often are referred there. The length and intensity of counseling at these two facilities is at their own discretion.

6. A follow-up process is being initiated to determine the efficiency of the program's referral process.

7. The recidivism rate is not known.

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#### Appendix II

## National Technical Assistance Resources: Arson, School Vandalism, and Juvenile Firesetting

#### 1. General Resources

Clearinghouse on Child Abuse and Neglect Information Children's Bureau Department of Health and Human Services P.O. Box 1182 Washington, DC 20013 (703) 558-8222

## 2. <u>Juvenile Firesetter Counseling Programs</u>

Laura Buchbinder, Director Juvenile Firesetter Program Office of Planning and Education U.S. Fire Administration Washington, DC 20472 (202) 634-7553

Fire Services and Arson Prevention Committee California Psychological Association 2100 Sawtelle Boulevard, #201 Los Angeles, CA 90025 (213) 553-0393

## 3. <u>School Arson and Vandalism Programs</u>

James Dahl, Director National School Resource Network Human Services Group 5530 Wisconsin Avenue, N.W. Washington, DC 20015 (800) 638-8090 (toll free)

Joan Grant Social Action Research Center 18 Professional Center Parkway San Raphael, CA 94903 (415) 472-2800 Juvenile Justice Clearinghouse National Criminal Justice Reference Service P.O. Box 6000 Rockville, MD 20850 (800) 424-2856 (toll free)

Dr. Kenneth Fineman Neuropsychiatric Medical Group 17822 Beach Boulevard, #437 Huntington Beach, CA 92647 (714),842-9377

> Joseph Grealy Administrative Assistant to the Superintendent School Board of Broward County 1320 S.W. Fourth Street Ft. Lauderdale, FL 33312 (305) 765-6000

Dr. Robert Rubel Institute for Reduction of Crime, Inc. P.O. Box 730 College Park, MD 20740 (301) 935-5400

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# CHAPTER 5

# REVENCE-MOTIVATED ARSON: DESIGNING AND IMPLEMENTING PREVENTION PROGRAMS

# by

# Clifford L. Karchmer Project Director

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Tab	le	of	Con	ten	ts

		Page
I.	Introduction	161
II.	Characteristics of Revenge-motivated Arson	161
III.	Transferrable Lessons: Revenge Arson and Domestic Disputes?	163
IV.	Some General Options for Revenge Arson Prevention Programs	166
V.	Steps in Planning a Revenge Arson Prevention Program	168
	A. Analysis of Past Revenge Arson Incident Patterns	169
	B. Tracking Possible Relationships Between Domestic Assaults and Revenge Arsons	169
*	C. Improved Record-keeping on Events Leading Up to Revenge Arsons	,170
	D. Establishment of an Arson Prevention Hotline	170
	E. Cooperative Relationships with Neighborhood Organizations	171
VI.	Conclusions	171
APPEN	DICES	
I.	Resource Bibliography	173
II.	Technical Resources on Revenge Arson	175

#### CHAPTER 5

161

# REVENGE-MOTIVATED ARSON: DESIGNING AND IMPLEMENTING PREVENTION PROGRAMS

#### I. Introduction

We all know that incendiary fires take a substantial toll in lives and injuries each year. For the past several years, deaths resulting from incendiary fires due to all motives have ranged between 700 and 1,000 annually, in addition to many more thousands injured. Unfortunately, for the purpose of analyzing how many of these deaths might have been prevented, arson death and injury statistics are not broken down by the known or even most probable motive of the arsonist. However, if arson deaths continue to be distributed statistically with the same frequency as the motives of a sample arrested for arson in 1956, then at least 50 percent of arson deaths (and presumably injuries as well) are due to the acts of arsonists motivated by (From available data, it is not possible to determine revenge. how many of the fires labeled as "suspicious" and "unknown" were actually revenge-motivated arsons.) The purpose of this chapter is threefold: (1) to briefly discuss the characteristics of revenge-motivated arson; (2) to explore some of the lessons that may be learned from domestic disputes and applied to revenge-motivated arson; and (3) to examine the prospects for preventing revenge arson, thereby reducing the serious loss of life and injury involved, as well as the property destroyed.

# II. Characteristics of Revenge-motivated Arson

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The criminology, fire service, and mental health literature which addresses revenge arson usually combines various specific sub-motives into one general revenge-motivated category.

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Jilted lovers, feuding neighbors, disgruntled employees, quarreling spouses, persons getting even after being cheated, and persons motivated by racial or religious hostility are often considered to fall within one "revenge" category. For the purpose of discussing intervention techniques that might prevent arson stemming from this motive, a helpful distinction was made by Tim Huff, Director of Fire Prevention at the California Department of Forestry Fire Academy. He characterized revenge arsonists as those, irrespective of age, who strike out against one of the following entities:

1. <u>Society in General</u>; through vandalism and as a result of street gang initiations, etc.

- 2. <u>Institutions</u> (mainly educational and governmental); in retribution for some real or perceived wrong.
- 3. <u>Groups</u>; usually religious, racial, or a rival peer group.

Individuals, such as parents, spouses, lovers, merchants, or employers.

Unfortunately, there have been no nationwide population studies of the perpetrators of revenge arson. Fortunately, we do have the observations of several experts, each of whom has dealt with a particular facet of revenge arson. For example, John Barracato, Chief of the Arson Fraud Unit of Aetna Life and Casualty Company, has observed that the South is the only region of the country where, according to Aetna insurance loss data, numbers of incidents of revenge arson outweigh arson-for-profit. Barracato attributes this to two factors: first, the relatively more common practice in the rural South of utilizing arson as a form of "impersonal violence" to settle conflicts; and second, to the prevalence of using arson to "settle" labor grievances surrounding non-union shop issues in the South.

4.

Elsewhere in the country, revenge arson is not typically viewed as either a rural or a labor-management problem, but rather as a distinctly urban and residential one. Specifically, many arson control personnel cite their perception that revenge arsons usually occur in low and lower-middle income neighborhoods. Since most urban crime in general occurs in these basically poor and blue-collar areas, the clustering of revenge arson there should not be taken as a startling finding. However, there is a growing realization that revenge arsons often grow out of the same social and economic stress problems that trigger other forms of violent domestic conflicts, and that by tracking patterns over time in police responses to domestic disturbances, one could gain some insight into future trends in revenge arson. However, this is a belief that remains to be rigorously tested." A review of the criminology and mental health literature on domestic disturbance prevention and intervention (see "Resource Bibliography" at the end of this chapter) provides some useful information on this point.

# III. Transferrable Lessons: Revenge Arson and Domestic Disputes?

In the early 1970's, police handling of domestic disturbances came to be viewed as the bellweather example of the police as social work professionals. Whether or not one agrees with this characterization, a fascinating mix of demonstration, experimental, and training programs were

<sup>&</sup>lt;sup>9</sup> In one jurisdiction these factors are being studied for their possible interrelationship. The City of New Haven received a 1980 grant from the U.S. Fire Administration to study the possible relationship of social and economic stress factors to arson in general, and revenge arson in particular. For more information on this effort, contact: Arson Warning and Prevention Program (AWPS), City of New Haven, 157 Church Street, Room 307, New Haven, CT 06510.

developed nationwide to upgrade the police handling of domestic disputes (see "Resource Bibliography" at the end of this chapter).

In most cases, police patrol personnel (sometimes working in special units) received intensive training in methods to mediate disputes by separating the conflicting parties, by acting as counselors and arbitrators, and by analyzing with very little time or information the conflict escalation potential of the situation to which they were called. In handling domestic disputes, police generally found that they were dealing with: (1) aggressive personalities (at least with one aggressive party); (2) situations that involved, at least half the time, some use of alcohol; and (3) a dispute that was often touched off by a minor personal criticism, insult, or joke.

By tracking their record of responses to the residences. where domestic disputes occurred, police were able to assemble short histories, maintained on index cards, of "problem" residences, with some rough calculations as to the violence potential associated with particular spouses, ex-lovers, etc. An important finding from a 1977 Police Foundation Kansas City study showed that homicides growing out of domestic disputes often traced back to a clear and steadily escalating history of violence at the addresses of the disputing parties. Presumably, early and effective police intervention could prevent escalation to the next more dangerous or perhaps lethal levels.

Unfortunately, few of the insights gained from the domestic dispute intervention experience automatically shed light on the <u>causes</u> and <u>triggers</u> of revenge arson, although police training on intervention techniques are potentially quite relevant to the arson issue. First, the revenge arsonist is usually not an aggressive personality, but more often a "passive-resistive"
type of person. Unlike the spouse abuser, most revenge arsonists do not personally assault their victims, and usually they have no history of prior physical assaults, although prior verbal abuse and property destruction seem to be fairly Second, investigators report that revenge arsons common。 usually are touched off by more abrupt and stressful events than the insults-mixed-with-alcohol combination that typically triggers domestic assaults. In contrast, person-to-person revenge arsons (as distinct from labor-management dispute arsons) seem to result from some traumatic loss for which the arsonist blames the victim. Further, these losses appear to the arsonist to be either substantial setbacks or irreversible. Examples of traumatic events which have preceded revenge arson include a final divorce decree (where the arsonist vigorously fought the divorce action initiated by the victim), resolution of a child custody case in the victim's favor, or the abrupt firing of the arsonist from his or her job. A number of reported recent revenge arson incidents have resulted from the forcible ejection of a patron from a private social club, where the altercation publicly humiliated the patron.

Third, and certainly important for the purpose of prevention, many (but perhaps not a majority) of the revenge arsonists do not act on the spur of the moment, but convey warnings (usually verbal) sometimes days and even weeks ahead of time to their intended victims. Perhaps because they are not habitually violent people, most revenge arsonists resort to threats as the principal form of aggression, short of the arson, which they can manage. Sometimes the revenge arsonist will communicate warnings and signal his or her future intention by destroying the property of the victim (typically some intimate or cherished personal item), or by setting a small "warning fire" in a conspicuously symbolic area, such as

on or under the bed where an infidelity has been alleged to have occurred.

In sum, domestic assaults seem to occur most often in situations where habitually aggressive personalities drink too much and taunt each other beyond some acceptable limit. In contrast to those "triggers" of personally assaultive violence, revenge arson is often touched off by substantially more severe, often irreversible, personal losses. An important point here is that the revenge arsonist enters a state of mind believing he or she has become a failure at some endeavor or in some relationship, and that the victim is completely to blame for this turn of events. While the subjective perception of failure characterizes the arsonist's state of mind, the arsonist often engages in acts of desperation that can be distinct and observable signals of this state of mind. Often, these acts of desperation are visible or audible and are communicated to someone, usually to the victim. The following discussion deals with legal and otherwise appropriate mechanisms for channeling these early warning signals to someone in an official capacity who can utilize them to prevent the arson.

# IV. Some General Options for Revenge Arson Prevention Programs

Any program to prevent revenge arson will need to focus on legally permissible methods for identifying future perpetrators. Revenge arson which is committed following interpersonal conflicts, or which is the result of a serious landlord-tenant problem, may be preceded by one or more warning signals. In New York City, both the city fire marshal's office and at least one community group (People's Firehouse in Brooklyn) encourage the reporting of arson threats, and have communicated this willingness to receive early warning

information to tenant and neighborhood groups. Fire marshals, and especially those who have worked in the South Bronx, have reportedly cultivated relationships with tenant and community organizations, and some marshals relate that numbers of such reports of threats have been forthcoming. The threats are investigated vigorously and thoroughly, and former fire marshal John Barracato reports that revenge arsons in that area were reduced as a result.

Any jurisdiction with an identified revenge arson problem might undertake a similar preventive program. Before doing so, however, it is important to consider a number of important legal as well as cost-effectiveness issues. First, if revenge arson is a problem where indigenous community organizations are either weak or absent, some mechanism must be found for the direct reporting of threats to fire or police homicide investigators. It can be argued that while community groups serve an important function in facilitating residents to come forward with complaints, there is a critical issue of lag time involved where any intermediary checks out a threat in order to verify it or settle the underlying conflict through mediation. It will not be long before someone rightly questions the propriety of community organizations "pre-investigating" death or injury threats, especially under conditions that obviously involve both the strong potential for violence and sensitive privacy issues involving the principals.

One preventive mechanism, as yet to be tested, might be a special municipal telephone number to report an arson threat. "Hotline" numbers are widespread and reportedly successful in "arson tip" programs, although those are primarily post-fire and financial reward-oriented in nature. Municipal authorities and civic organizations could easily publicize the existence of an arson prevention hotline. If it is true that "a threat to burn is a threat to kill" then local authorities should have

little trouble in encouraging potential victims to come forward, especially if the victim/informant can be assured of protection from physical violence. Widespread attendant publicity might be necessary, however, given the likely perception on the part of victims that arson threats often do not materialize (and we do not know whether this is an accurate perception).

A related issue is the possible reluctance of a potential victim to inform on someone with whom he or she still maintains some relationship, however strained it might be. To address this concern, the local arson (or homicide) unit which designs a special revenge arson prevention program might consider the option of recommending or arranging professional counseling and other mental health assistance for a potential arsonist, or referring that person to a clinical program. Where a strong, direct threat that seems impending is communicated to investigators, it is important to consider whether a mental health form of intervention could succeed at that point, or whether the matter should better be pursued by criminal justice. personnel who hold the option of invoking arrest powers and filing felony charges. It is important to consider early in the design of a revenge arson prevention program that important tradeoffs will be involved: for example, full reporting of threats might be achieved at the expense of swift and effective preventive responses, or vice versa.

# V. Steps in Planning a Revenge Arson Prevention Program

Local officials who want to develop and implement their own prevention programs can benefit from the insights gained by other agencies with experience in this area (see Appendix I, "Resource Bibliography," and Appendix II, Technical Resources," at the end of this chapter). Since revenge-motivated arson stems from a variety of residential, personal, and social

conflicts, it is likely that no two local revenge arson problems will be identical or due to the same underlying causes. Therefore, it is important that local officials--fire, police, mental health, housing, or others--first conduct an analysis of local patterns of revenge arson incidents in order to utilize that information as the basis for predicting, as much as possible, future trends in local revenge arson activity. In order to most effectively go about this, officials should consider the following as basic planning steps:

#### A. Analysis of Past Revenge Arson Incident Patterns

It is important to distinguish what early warning signals or actions preceded each major type of revenge arson: landlord tenant, spouse-spouse, etc. Particularly important to identify are distinctions between general/specific prior verbal threats and destructive property acts that preceded the revenge arsons.

### B. <u>Tracking Possible Relationships Between Domestic</u> <u>Assaults and Revenge Arsons</u>

While there is information that the types of individuals who commit spouse abuse are often different, in terms of personality, than those who commit revenge arson, there is reason to believe that certain underlying conditions may be similar if not identical with respect to the two groups. Until final results of the New Haven "Socio-Economic Arson Study" are in, it may be helpful to conduct one's own local study of the relationship between incidents of spouse abuse and other domestic violence (including non-assault breaches of the peace), and revenge-motivated arson.

Since incidents of domestic violence are more frequent occurrences than revenge-motivated arson (in most jurisdictions), a study of trends over time regarding domestic

violence may provide insights into trends concerning revenge arson. The value of such a local study is the possibility that increased incidents of revenge arson, perhaps leading to epidemics, could be identified for increased intervention early in their history.

#### Improved Record-keeping on Events Leading c. Up to Revenge Arsons

In order to determine whether prior warning signals of oncoming revenge arson activity are reliable predictors of this activity, it may be necessary to improve law enforcement data collection. A number of police departments undertook similar efforts concerning domestic violence in order to gather information on events that preceded serious assaults. Redesign of basic crime incident forms, or the design of simple new data collection instruments, may assist local officials in gathering this type of data. A helpful set of forms used for domestic violence analysis is contained as Appendix A, "Dispute Report Form," in Morton Bard and Joseph Zacker, The Police and Interpersonal Conflict (Washington, D.C.: Police Foundation, 1909 K Street, N.W., 1976).

#### Establishment of an Arson Prevention Hotline D.

In order to encourage potential victims of revenge arson to come forward and report threats made to them, local officials could establish twenty-four-hour hotlines to receive victim calls. In order to assure an immediate response, it is important to consider placing this responsibility in the police department in order to assure twenty-four-hour coverage and to make use, if necessary, of police arrest powers to prevent the potential arsonist from striking. Another option is to locate the hotline in a fire department arson unit, because of possibly greater victim willingness to report a fire-oriented

threat to a fire service agency. At the present time, too little is known about either the police or fire hotline option, or additional mental health or community group options, to make any recommendation as to the location of the hotline and the specific nature of the official response to reports of threats.

# E. Cooperative Relationships with Neighborhood Organizations

Where numbers of revenge arson threats grow out of sour landlord-tenant relations, it may be advisable to consider working with community groups and tenant organizations in order to make use of their legitimacy in the community. This legitimacy can serve the purpose of encouraging neighbors who overhear or become aware of threats to report them to the groups so that effective preventive action can be taken. Officials or others who want to obtain more information on this particular point should contact the People's Firehouse group in Brooklyn, New York, or John Barracato, formerly a New York City Fire Marshal. (See Appendix II, "Technical Resources," at the end of this chapter for specific addresses.)

## VII. <u>Conclusions</u>

It is likely that revenge arson will continue to be considered as an irrational and therefore unpreventable crime problem, but this need not be the case. There is a growing body of information to suggest that identifiable personal, social, and even economic stresses build up and influence someone to commit an act of revenge arson. Further, many revenge arsons are far from spontaneous acts, even though an arsonist might be in a highly emotional state when he or she sets the fire. For this reason, it is important to enlist the resources and expertise of those specialists who have demonstrated an understanding of similar stress problems that lie behind social and crime problems. Specifically, it would seem appropriate to involve local housing, mental health, police, and fire agencies in the joint, cooperative planning of revenge arson prevention programs. Private marriage counseling, conflict arbitration, and other groups that specialize in defusing tense situations might also be involved constructively.

It is important to recognize that the prevention of revenge arson is another example of a crime control problem for which responsibility is shared by law enforcement, social service, and mental health agencies. Clearly, the responsibility for designing effective preventive measures lies within the domain of many specialized disciplines whose members do not routinely interact with each other, or with fire and police personnel for that matter. Unless important interaction among these disciplines is facilitated with respect to the revenge arson problem, it is questionable whether any truly effective prevention program could be designed, field tested, and--if successful--replicated by other jurisdictions. A very limited number of researchers, public agencies, and others have studied this facet of the arson problem. They are contained on the list of "Technical Resources," which follows as Appendix II to this chapter.

172

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#### Appendix I

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Zacker, Joseph, and Morton Bard. "Effects of Conflict Management Training on Police," Journal of Applied Psychology, Vol. 58, No. 2, 1973.

#### Appendix II

### Technical Resources on Revenge Arson

John Barracato, Manager Arson Fraud Unit Claims Division Aetna Life and Casualty Company 151 Farmington Avenue Hartford, CT 06156 (203) 273-7981

Anne Mehringer, Director National Clearinghouse on Domestic Violence Office on Domestic Violence Department of Health and Human Services P.O. Box 2309 Rockville, MD 20852 (301) 251-5172

Special Agent Anthony O. Rider Behavioral Sciences Unit FBI Academy Quantico, VA 22135 (703) 640-6131

Timothy Huff Director of Fire Prevention Training Fire Academy California Department of Forestry 4501 State Highway 104 Ione, CA 95640 (209) 274-2426

Inspectors Jack K. Hickam, and Dennis Fowler Arson Task Force Seattle Fire Department 301 Second Avenue South Seattle, WA 98104 (206) 625-4096

Fred Ringler, Director People's Firehouse, Inc. 113 Berry Street Brooklyn, NY 11211 (212) 388-4696

Inspector Mujahid Malik Detroit Fire Department 250 W. Larned Detroit, MI 48224 (313) 224-2030

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