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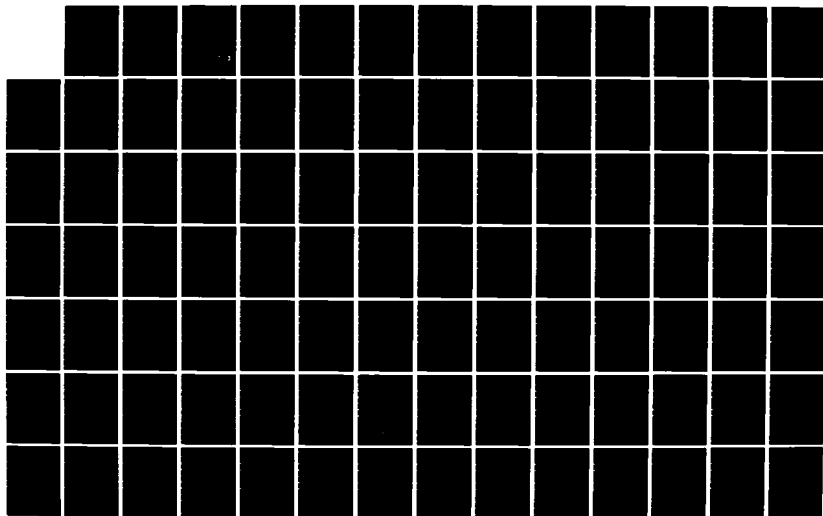
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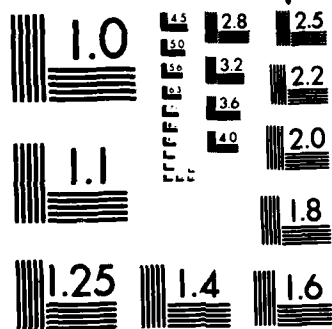
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Inmate Population Dynamics at the United States Disciplinary Barracks

Captain Thomas E. Lohman
HQDA, MILPERCEN (DAPC-OPP-E)
200 Stovall Street
Alexandria, VA 22332

Final report 4 August 1983

Approved for public release; distribution unlimited

A thesis submitted to College of Criminal Justice, Sam Houston State University, Huntsville, Texas 77341 in partial fulfillment of the requirements for the degree of Master of Arts: Criminology and Corrections.

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**INMATE POPULATION DYNAMICS AT THE UNITED
STATES DISCIPLINARY BARRACKS**

A Thesis

Presented to

the Faculty of the College of Criminal Justice

Sam Houston State University

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by

Thomas E. Lohman

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The objectives of this study were: 1. to briefly explain the his- tory and role of the United States Disciplinary Barracks (USDB) as part of military corrections; 2. to review the philosophical and organizational context of the USDB as part of the military justice system; 3. to determine the extent and analyze the significance of rates of population changes at the USDB; and 4. to assist in future planning by providing a method of simulating the effects on future populations of rates of admission and length, (see reverse)		

20. (continued) of time served.

Research and analysis of population trends over the past 10 years were conducted utilizing historical data obtained at the USDB. The admission rates and time served were evaluated, and a method was devised which made it possible to predict the impact on the future population of simulated adjustments in both factors.

The findings were: 1. The population at the USDB is at higher than 95% of its total capacity. 2. Due to insufficient cell space, not all prisoners sentenced to the USDB actually go there. 3. The increase in prisoner population is a relatively recent phenomenon, having begun in the late 1979-early 1980s. 4. A significant contributing factor to the increase in population is increasing length of stay. 5. It is possible to determine the effects of manipulation of admission rates and time served on prison population. 6. Knowledge of the results on population of certain changes to admission rates or length of time served can aid in policy making that could positively affect the rate of future population.

The population at the USDB can be controlled to a greater degree than at other penal institutions because the military justice system, of which it is a part, has greater control of the system as a whole. Armed with an understanding of the impact on population changes, rates of admissions and time served, policy makers can effectively anticipate trends leading to overcrowding, and can take actions to prevent them.

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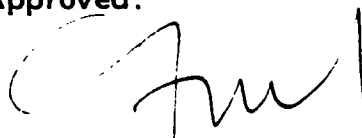
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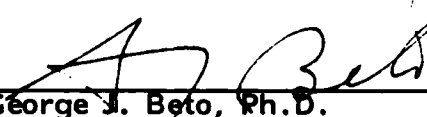
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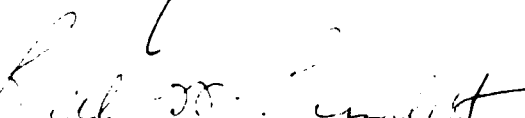
Thomas E. Lohman

A THESIS

Approved:


Charles M. Friel, Ph.D.


George J. Beto, Ph.D.


Billy W. Bramlett, Ph.D.

Approved:


Victor G. Strecher, Ph.D.,
Dean and Director


Harold Richards, LTC, PMS

ABSTRACT

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Purpose

The objectives of this study were: (1) to briefly explain the history and role of the United States Disciplinary Barracks (USDB) as part of military corrections; (2) to review the philosophical and organizational context of the USDB as part of the military justice system; (3) to determine the extent and analyze the significance of rates of population changes at the USDB; and (4) to assist in future planning by providing a method of simulating the effects on future populations of rates of admission and length of time served.

Methods

Research and analysis of population trends over the past 10 years were conducted utilizing historical data obtained at the USDB. The admission rates and time served were evaluated, and a method was devised which made it possible to predict the impact on the future population of simulated adjustments in both factors.

Findings

1. The population at the USDB is at higher than 95% of its total capacity.
2. Due to insufficient cell space, not all prisoners sentenced to the USDB actually go there.

3. The increase in prisoner population is a relatively recent phenomenon, having begun in the late 1979-early 1980s.

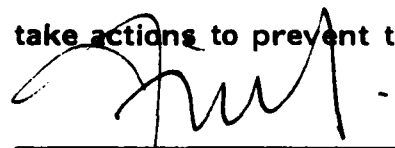
4. A significant contributing factor to the increase in population is increasing length of stay.

5. It is possible to determine the effects of manipulation of admission rates and time served on prison population.

6. Knowledge of the results on population of certain changes to admission rates or length of time served can aid in policy making that could positively affect the rate of future population.

Conclusions

The population at the USDB can be controlled to a greater degree than at other penal institutions because the military justice system, of which it is a part, has greater control of the system as a whole. Armed with an understanding of the impact on population changes, rates of admissions and time served, policy makers can effectively anticipate trends leading to overcrowding, and can take actions to prevent them.



Charles M. Friel, Ph.D.,
Supervising Professor

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I dedicate this work to my wife Jane who selflessly gave of herself to assist and support me, and to my sons, Chad and Jeremy, who despite their youth showed remarkable degree of self discipline at times when it was most needed.

I wish to sincerely thank the members of my committee, Dr. George Beto, Dr. Billy Bramlett, and LTC Harold Richards and most especially to my committee chairman, Dr. Charles Friel, for whom I learned lessons that will stay with me through my future endeavors.

TABLE OF CONTENTS

	PAGE
ABSTRACT	iii
ACKNOWLEDGEMENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
PREFACE	x

CHAPTER

I.	THE ARMY CRIMINAL JUSTICE SYSTEM	1
	Jurisdiction	2
	Court Martial Jurisdiction	5
	Commanders' Responsibilities	6
	Confinement and Corrections	12
	Summary	16
II.	POPULATION DYNAMICS	17
	Factors Affecting Prison Crowding: Military vs. Civilian Environment	17
	Methodology	20
	Population Dynamics	24
	Summary	37
III.	MEETING FUTURE NEEDS	41
	The Army Correctional System	41
	Future Population	46
	Policy Simulation	49
	Policy Simulation Technique	52
	Policy Simulation Models Analysis	57
	Summary	71
	Conclusion	72
IV.	SUMMARY	73
	The Correctional Environment	73
	Addressing the Issue	75

	PAGE
Findings	76
Recommendations	78
REFERENCE NOTES	81
REFERENCES	83
APPENDICES	86
Appendix A. Raw Data	87
Appendix B. Proceedings of the National Workshop on <i>Prison Population Forecasting</i>	93
VITA	99

LIST OF TABLES

TABLE	PAGE
1. U.S. Army Confinement/Correctional Facility Average Pre Trial Population--Calendar Year 1982	13
2. Armed Forces End Strength Population Per Fiscal Year as Indicated	19
3. Reference Key of Sequence Numbers to Month/Year	22
4. Months 1 through 125 End of Month Population	25
5. Percent Change in Population over Time by Month, by Quarter, and by Year	28
6. Monthly Admission Cohort Time Served	38
7. Policy Simulation Matrix	54
8. Policy Simulation Substituted Data	56
9. Admission Rate to Equilibrium	58
10. Results of Policy Simulation: Admissions at 50 Per Month	61
11. Results of Policy Simulation: Admissions at 100 Per Month	64
12. Results of Policy Simulation: Admissions at 150 Per Month	66
13. Results of Policy Simulation: Admissions at 200 Per Month	68
14. Results of Policy Simulation: Admissions at 250 Per Month	70

LIST OF FIGURES

FIGURE	PAGE
1. End of Month Population of USDB: 1 Jul 1972 - 1 Nov 1982 ...	26
2. Monthly Admissions	31
3. Monthly Releases	32
4. Monthly Admissions to Release Ratio	34
5. Monthly Admissions: Percent of Population	35
6. Monthly Releases: Percent of Population	36
7. Monthly Admission Cohort Time Served	39
8. Population Dynamics: Admissions of 50 Per Month Over Time Served	60
9. Population Dynamics: Admissions of 100 Per Month Over Time Served	63
10. Population Dynamics: Admissions of 150 Per Month Over Time Served	65
11. Population Dynamics: Admissions of 200 Per Month Over Time Served	67
12. Population Dynamics: Admissions of 250 Per Month Over Time Served	69

PREFACE

The United States Disciplinary Barracks (USDB) is the maximum security correctional facility utilized jointly by the U.S. Army, Air Force and Marine Corps for incarceration of offenders sentenced to imprisonment for terms exceeding one year. Located on the Fort Leavenworth, Kansas military reservation, the USDB is operated by the Department of the Army. Its primary mission is to provide the correctional treatment and training, care and custodial supervision necessary to return military prisoners to duty as effective soldiers or to civilian life as useful citizens with training in a marketable skill, and with improved attitudes and motivation (USDB Staff Manual, 1975).

The problem of prison overcrowding is one of epic proportions within many state correctional systems and many serious, determined attempts are being made to identify the causes and eventual relief of these problems. The overcrowding problems have not yet reached major proportions at the USDB; however, they are beginning to be felt elsewhere within the military justice system.

At the present time the maximum inmate population capacity is 1503, and as of 24 May 1983, the total population was 1488 confined inmates. At the same time, however, approximately 190 convicted prisoners whose sentences meet the requirements of incarceration at the USDB were being held in local installation or area confinement facilities, because the USDB had already reached its authorized, near maximum capacity (McCotter, Note 1).

It has been discovered that it is extremely difficult to identify and determine any one or even combination of variables responsible for the increase in population in various correctional systems, and it is probably equally difficult to determine the cause of the problems beginning to be felt at the USDB as well. An example of the paradoxical nature of the problem is the fact that during the past 10 years, the overall end strength population of the United States Armed Forces has declined by 9.2%, while at the same time the population of the USDB has increased by 37.6%.

Assuming the inmate population at the USDB to be the end product of all the elements of the military justice system, it is possible that if a cause, or causes for the increasing population can be identified, positive actions can be taken to neutralize the effects of those causes within the formally structured military environment. These actions could be taken quickly and effectively. Depending upon the perceptions of the present population situation at the USDB today, the time may have arrived for the military leaders to reevaluate their outlook concerning objectives and goals of the correction program.

CHAPTER I

THE ARMY CRIMINAL JUSTICE SYSTEM

On 27 May 1874 the United States Congress passed the bill that authorized the establishment of a military prison at Fort Leavenworth, Kansas. This facility, then called the United States Military Prison, was redesignated as the United States Disciplinary Barracks in 1915.

During its 109 year history, control of the facility has on several occasions been under the United States Department of Justice as a federal prison; however, on 22 October 1940 the USDB was again returned to military control, and the installation has been operated first by the War Department and later the Department of the Army. Since 1959, the USDB has been the only major correctional institution for the confinement of long term prisoners. Although primarily maintained for U.S. Army inmates, (enlisted and officer, male and female) the USDB houses sentenced offenders of the Marine Corps and Air Force, as well as a small number of female Navy personnel (USDB, Annual Historical Summary, 1979).

Although the present inmate population is at or very near its maximum authorized capacity, today's is not the highest population in USDB history. In 1945, at the conclusion of World War II, the population was 1982, but at the same time the Armed Forces population was more than five times higher than that of today. During its high World War II and post war population the facility was able to incarcerate the inmates; however, due to physical

modification to the facilities of the USDB the authorized maximum prisoner population is now 1503 (Haines, Note 2).

The inmate population is a function of two variables: the number of admissions and, the length of their stay. In order to better understand the inmate population at the USDB, an examination of the elements of the military justice system must be understood. In this sense the USDB can be viewed as an end product of the techniques, the efficiency and the overall philosophy of military justice. If the near capacity inmate population, exacerbated by a surplus of prisoners awaiting transfers to the USDB from Installations or Area Confinement Facilities, is perceived as a problem, perhaps a solution to that problem can be found within one or another of the elements which a military member becomes exposed to on his journey through the military justice system, leading ultimately to the USDB.

Jurisdiction

Constitutional Provisions

The United States Constitution provides that Congress has the power "... to make Rules for the Government and Regulation of the land and naval Forces." It also provides in Clause 18 that Congress has the power "... to make all Laws which shall be necessary and proper for carrying into Execution for foregoing powers" These provisions indicate the perception of the need for the military to have a system of procedural rules and regulations different from those provided by Article III of the constitution.

Under the Fifth Amendment, the protections of "indictment" and "trial by jury" are not available to soldiers tried in the military justice system as they are to accused civilians, who are afforded these protections under the Fifth and Sixth Amendments, and Article III. The Fifth Amendment specifically "exempts those cases arising in the land or naval forces, or in the militia, when in actual service in time of war or public danger from the requirement of prosecution by indictment and, inferentially, from the right to trial by jury."

The power granted to the Congress and the exemption of the military from the guarantees of the Fifth Amendment are the sources of military law which provide for the creation of a military justice system which permits the exercise of military jurisdiction over personnel serving in the Armed Forces.

International Law

Brief mention must be made of the other source of military jurisdiction, that of international law. The sources of military jurisdiction in international law are the law of war, the visiting forces doctrine and express agreements concerning jurisdiction (Department of the Army Pamphlet, 1976).

Military Discretion

Since the time of the American Revolution, the military has been given broad discretion in dealing with its own personnel in matters relating to military justice. The U.S. Supreme Court as early as 1863 recognized the importance of the military's exercising jurisdiction over its personnel and as a consequence, traditionally has refrained from involvement in cases

where the military establishment has dealt with its own personnel (Department of the Army Pamphlet, 1976).

The Manual for Court Martial

An act for which the law provides a penalty is considered a crime. For the military, the Uniform Code of Military Justice (UCMJ) specifies the types of conduct for which a soldier may be legally punished. The UCMJ is a federal law, enacted through congressional legislation on 5 May 1950. It was subsequently revised, codified and enacted into law as part of Title 10 United States Code on 10 August 1956. This document is the basis of the justice system in the military. It declares what conduct is a crime, establishes the various types of courts, and sets forth the basic procedures to be followed in administering military justice. The UCMJ is located as an appendix of the Manual for Court Martial (MCM), which is an executive order of the President. The MCM explains the rules which are to be followed in administering justice in more detail than the UCMJ. The MCM, for example, explains what conduct constitutes a violation of the UCMJ, explains rules of evidence for courts martial, contains a list of maximum punishment, and explains who comes under military jurisdiction and hence, subject to the provisions of the code. The Manual for Court Martial, along with the Uniform Code of Military Justice forms the basis of military law.

Paragraph 2 of the MCM states that military jurisdiction is normally exercised through one of four ways: (a) Military Commission: A tribunal created to try persons, not members of the Armed Forces, for criminal offenses committed during a period of war or martial rule.

(b) Courts of Inquiry: A guideline article of the UCMJ explaining appointments of courts of inquiry to investigate any matter to which no other formal procedures apply. (c) Courts Martial: The most commonly used agency for the exercise of military jurisdiction. (d) Commanding Officer: Article 15 of the UCMJ provides that for minor offenses, commanding officers may impose certain limited forms of nonjudicial punishment upon personnel within their command without resort to trial by court martial.

Court Martial Jurisdiction

As a general rule jurisdiction over a military offender does not depend on where a particular offense was committed, but rather upon the status of the accused and whether or not the offense was service connected. If the accused is found to be a member of the armed forces at the time of the offense and at the time of trial, and if the offense is service connected, the accused is subject to court martial jurisdiction. Since Article 5 of the UCMJ provides that it (the Code) "applies in all places," it is of no importance in determining jurisdiction whether or not the offense was committed beyond the boundaries of the United States. Additionally, courts martial are not required to try an accused in the place where the crime was committed (Department of the Army Pamphlet, 1976).

Service Connection

The question of service connection as a requirement of court martial jurisdiction was determined by the U.S. Supreme Court in 1969 in *O'Callahan v. Parker*, 395 U.S. 258, 261 (1969) in which an active duty military member (O'Callahan) was arrested and charged with numerous

violations related to housebreaking and rape by the Honolulu, Hawaii City Police. Upon learning that O'Callahan was a military member, he was returned to the military where he was tried and convicted by a general court martial. O'Callahan appealed the conviction on the grounds that the court martial did not have jurisdiction to try him for nonmilitary offenses committed off post while on an evening pass. After the conviction was affirmed by the lower courts, the U.S. Supreme Court granted certiorari, and determined that the offenses for which O'Callahan was tried were "not service connected and therefore, not triable by court martial." In writing the majority opinion, Justice Douglas stated that because the offenses were not service connected, the military could not try O'Callahan by court martial. At the time of the offenses, Justice Douglas noted that O'Callahan was off post, off duty and dressed in civilian clothing. Additionally, his offenses were perpetrated against a civilian victim and were of no military significance (Department of the Army Pamphlet, 1976).

Commanders' Responsibilities

Company Commander

An Armed Forces member may enter the military justice system through a number of different means. The accused may be apprehended by the military police in the act of committing a crime, or pursuant to investigation by the military police or Criminal Investigation Division. He or she may have been arrested by civilian police and returned to military officials for action if a service connection is established, or the accused may enter the system as a result of investigation by a court of inquiry,

through the chain of command, or by investigation initiated by the unit commander.

Regardless of how the commander learns of an alleged offense his primary responsibility is to insure that the matter is promptly and adequately investigated, reported, and proper disposition action is taken (Department of the Army, Field Manual, 1974).

Investigation

The investigation provides the company commander with the information necessary to make an intelligent and appropriate disposition of the incident. The investigation may be accomplished by the commander himself, or another competent appointed official. The investigation should be oriented so that the following questions are addressed: (a) Was an offense committed? (b) Was the suspected soldier involved in the offense? (c) What is the character and military record of the suspected soldier? This investigation is conducted to establish a firm factual foundation so that a determination can be made concerning what actually happened and what should be done. The investigation is informal in nature and consists of interviews and reviews of police or other reports (Department of the Army, Field Manual, 1974).

Reporting

Army Regulation (AR) 195-2 requires that all cases of criminal conduct are reported to the office of the Provost Marshal. Certain major offenses are subsequently forwarded to the major commander in accordance with AR 190-40 (Department of the Army, Field Manual, 1974).

Disposition

After the preliminary investigation is completed, the company commander must decide on the action to be taken. At that time he has the option to take any of the following actions: (a) Dismiss charges and take no action. (b) Take nonpunitive disciplinary action for minor offenses. Such actions are generally of an administrative nature and include such things as temporary deferment of discretionary benefits, corrective training, admonitions and reprimands, and bar to reenlistment. (c) Imposition of nonjudicial punishment under Article 15 UCMJ. This form of punishment may be imposed by a commander upon military personnel of his command, who have committed a minor offense in violation of the UCMJ. The term "minor" ordinarily excludes misconduct of a kind which could be punished by dishonorable discharge or confinement at hard labor for more than one year if tried by a General Court Martial. Nonjudicial punishment can be imposed only upon the consent of the accused who may at any time refuse nonjudicial punishment proceedings and demand trial by court martial. (d) Prepare court martial charges against the accused. Such charges are forwarded by the company commander with a recommendation for trial by court martial to the Summary Court Martial authority who is usually the battalion commander (Department of the Army, Field Manual, 1974).

The Battalion Commander

Upon receipt of recommendations for court martial from a company commander, the battalion commander too has various options regarding disposition of offenses: (a) The battalion commander has authority to

dismiss the charges. (b) He may decide to try the accused by Summary Court Martial, which is a one man court designed to try relatively minor crimes. It is characterized by having simplified procedures; and the maximum punishment is determined by the rank of the accused. In no cases can punishment be more than confinement to hard labor for one month, forfeiture of two-thirds pay per month for one month and reduction in pay grade. A Summary Court Martial may be held only if the accused agrees to trial at the Summary Court level. If he objects, the battalion commander may then consider trial by a higher court martial. (c) The battalion commander may decide to forward the case with a recommendation for trial by Special Court Martial. He may elect to exercise the option based upon the nature or severity of the offense, or if the accused refused to accept an offer of a Summary Court Martial. The Special Court Martial consists of at least three members, a trial counsel and a defense counsel. A military judge may be appointed for the trial as well. At a Special Court Martial, the maximum sentence is confinement at hard labor for six months, forfeiture of two-thirds pay per month for six months, and reduction to the lowest enlisted grade. In certain cases, the sentence may include a bad conduct discharge; however, the authority to impose this as an addition to the other punishments authorized by this level court martial can only be granted by a General Court Martial convening authority. (d) The battalion commander can also recommend a General Court Martial, which tries the most serious offenses. It consists of at least five members, a trial counsel, a defense counsel, and a military judge. The Counsel must be qualified attorneys. Before a case may be tried by General Court Martial, a formal investigation by an impartial investigator must be

conducted. This investigation is an "... inquiry as to the truth of the matter set forth in the charges, consideration of the form of charges, and a recommendation as to the disposition which should be made of the case in the interest of justice and discipline." The General Court Martial may adjudge the most severe sentences authorized by law, including dishonorable discharge. A General Court Martial can be convened only by an official specifically designated in Article 22 of the UCMJ. Normally, commanders at Brigade level and officers up the chain of command as far as the President of the United States are authorized to convene a General Court Martial (Department of the Army, Field Manual, 1974).

Separation in Lieu of Court Martial

Whenever court martial charges have been preferred, a soldier may request a discharge "for the good of the service" (Chapter 10, AR 635-200) if the offense charged has a maximum punishment which includes either a bad conduct or dishonorable discharge. Such action is taken only after the soldier has been assigned legal counsel, and the soldier must certify that he understands that he may receive a discharge under less than honorable conditions. The soldier's request begins with his company commander who submits it, along with his recommendation for disposition through the chain of command to the commander exercising general court martial jurisdiction (convening authority). The final action on the request is decided by the convening authority. If the request for discharge is approved, the soldier normally will receive an undesirable discharge.

The Court Martial Process

Like all American courts, courts martial are adversary proceedings. Lawyers for both the government as well as the accused present the facts, law, and arguments most favorable to their side following the rules of procedure and evidence. The military judge (when one is present) decides questions of law, while the members of the court martial, like a jury, apply that law and decide questions of fact. Only a court martial can determine the ultimate question of innocence or guilt. A court martial conviction is considered a federal court conviction.

In any case involving criminal conduct, the question of constitutional rights and safeguards must always be considered. In courts martial as in civil proceedings every man is presumed innocent until a court finds beyond a reasonable doubt that he is guilty. Likewise, he is protected from evidence obtained as a result of unlawful search and seizure, he is protected against self incrimination, and guaranteed the right to counsel. A soldier accused of a crime also has the right to be advised of the charges against him at the earliest time possible so that he can prepare his defense and so that his guilt or innocence may be determined without unreasonable delay (Department of the Army Pamphlet, 1976).

Reviews and Appeals

Every court martial conviction is reviewed by the convening authority who either approves or disapproves the result of the trial. Summary and Special Courts Martial are also reviewed by the Staff Judge Advocate. This same person also reviews General Courts Martial for the purpose of advising the convening authority. All General Courts

Martial are subsequently reviewed by the Judge Advocate General or the Court of Military Review. A soldier found guilty may appeal his conviction by a General Court Martial or a Special in which a bad conduct discharge is adjudged to the Court of Military Review, and the Court of Military Appeals, a civilian three man court in Washington, D.C. The only remaining possibility beyond the Court of Military Appeal is the U.S. Supreme Court (Department of the Army Pamphlet, 1976).

Confinement and Corrections

Pretrial Confinement

An accused pending charges ordinarily continues the performance of normal duties within his or her organization while awaiting trial. Routine control and accountability procedures within the military organization are normally sufficient to insure control over a unit member awaiting trial. If necessary, additional internal control methods may be employed within the unit, without resorting to the need for pretrial confinement. Chapter 5 of the Manual for Court Martial states "... confinement will not be imposed pending trial unless deemed necessary to insure the presence of the accused at the trial or because of the seriousness of the offense charged."

Pretrial confinement, when necessary, is normally conducted at local installation or area confinement facilities. Table 1 provides an illustration of the average daily pretrial population at the various confinement facilities operated by the Army.

Table 1

**U.S. Army Confinement/Correctional Facility
Average Pretrial Prisoner Population--
Calendar Year 1982**

Installation	Conus Confinement Facilities		Capacity
	Army Personnel Pretrial	Other Services Pretrial	
Bragg	3.2	0.0	CIV
Campbell	11.3	0.0	60
Carson	11.2	0.1	62
Hood	10.9	0.0	75
Lewis	19.4	0.0	50
Meade	6.6	0.1	57
Ord	11.0	0.0	100
Polk	1.3	0.0	34
Riley	4.0	0.0	96
Benning	13.5	0.0	38
Dix	1.8	0.0	USN
Gordon	7.1	0.0	40
Knox	6.0	0.0	50
Sill	4.8	0.3	70
L. Wood	0.9	0.0	CIV
Clayton	1.9	0.3	38
Richardson	1.8	0.0	25

Source: Average Daily Prisoner Population, (Monthly Report),
February 1983.

Post Trial Confinement

Post trial confinement for soldiers convicted by courts martial occur at installation confinement facilities (ICF), area confinement facilities (ACF), the U.S. Army Correctional Activity (ACA) at Fort Riley, Kansas and at the USDB. (a) Installation and Area Confinement Facilities: Post trial confinement in installation and area confinement facilities is generally restricted to short term prisoners and those awaiting transfer to the ACA or the USDB. (b) The U.S. Army Correctional Activity, previously known as the Retraining Brigade, provides an intensive motivational and retraining program to prisoners whose sentences include no punitive discharge and six months or less confinement. Prisoners with executed punitive discharges must be assigned by direction of the Secretary of the Army. The program is designed to prepare prisoners for return to honorable Military Service or to rapidly identify and eliminate from military service through administrative or legal actions those prisoners who have neither the desire nor ability to serve honorably. (c) The United States Disciplinary Barracks:

Its mission is to provide a place of confinement for prisoners with punitive discharges or those with a sentence in excess of 6 months confinement and no punitive discharge. [It] provides an extensive vocational and academic training program to improve prisoner attitudes and motivation for either return to duty or release to civilian life as useful citizens (USDB Master Plan, 1978:19).

In addition to Army prisoners, approximately 20% of the USDB population is composed of Marine and Air Force prisoners. The U.S. Navy incarcerates their long term prisoners at Norfolk, Virginia, but utilizes the USDB to house several female prisoners. All service branches employ local short term facilities to accommodate pretrial and temporary or short

term sentenced offenders; only the Army and Air Force operate Retraining Centers (Hodges, Note 3).

Goals and Objectives of Army Corrections

In 1968 the many separate provisions for administration and operation of military correctional facilities were repealed by the Military Correctional Facilities Act (Public Law 90-337, 10 USC 951-954). Under this act, the Secretary of each Military Department was tasked to continue to develop correctional programs and facilities for their service branches. However, regulations of each Military Department must be generally uniform. The goals and objectives of the correctional process are contained in Army Regulation 190-47, which defines the overall mission of commanders charged with responsibility for Army confinement facilities, and the specific role of the USDB in the Army correctional program.

As defined in AR 190-47, the three overall objectives of the Army correction program are:

1. Return to military duty the maximum possible number of military prisoners, whose sentences do not include a punitive discharge, as morally responsible and well-trained soldiers with improved attitudes and motivation toward their obligation to self, the United States Army, and the Nation.
2. Return to civilian life or restore to duty as appropriate, the maximum possible number of military prisoners whose sentence include punitive discharge, as morally responsible and well-trained individuals with improved attitudes and motivation who are capable of assuming responsibilities associated with their return to civilian life or military duty.
3. Promptly identify and expeditiously release from Army confinement through separation from the service or through transfer to the Federal correctional system, military prisoners who will not respond or are capable of effectively responding to Army correctional treatment, retraining, or discipline (Army Regulation 190-47, 1975:1-1).

Summary

The preceding description of the military justice system, including military corrections, was provided to make it possible to view the USDB within the context in which it functions. It can be viewed as just one institutional response to crime and the military offender operating within the context of the military correctional system. The ability to successfully meet its mission requirements, and to preclude problems relating to expanded population, the USDB, and other elements of the entire military justice system may require more attention toward developing interdependent, inter-related coordination of tasks and functions. The following chapters will explain some of the characteristics and changes of the USDB population, and the factors that account for the present situation. Analysis of these dynamics may make it possible to determine the best means for ensuring that the military justice system does function as a system in its most efficient manner.

CHAPTER II

POPULATION DYNAMICS

Factors Affecting Prison Crowding: Military vs. Civilian Environment

The 1970s was a decade of crisis for correctional facilities throughout the United States. Throughout the decade, and on into the 1980s serious disturbances at such places as Attica, McAlister and Santa Fe focused public attention on the state of correctional facilities themselves, and the goals and objectives of the criminal justice system that sends people to them. Increased attention of the news media helped place correctional policies and procedures before public scrutiny and, when viewed in the context of explicit economic and humanitarian costs, prison overcrowding suddenly became a matter of national concern.

Prison and jail overcrowding is an issue addressed directly and frequently by the courts. Often, state or local correctional systems are assigned limits beyond which their inmate populations may not rise. For the first time, prisons and jails have been forced with trying to manage the level of their populations (Gardner, 1982).

Fortunately, the USDB has experienced neither severe disturbances nor drastic, sudden or uncontrollable increases in inmate population. In fact, until June 1981, the USDB was not even close to its maximum capacity of 1503 inmates. Beginning about that time, however, the population began a sudden and dramatic climb that ultimately resulted in its

present situation of having a backlog of prisoners whose sentence length requires that they be served at the USDB, but due to insufficient cell space, are required to serve part or all of their sentences at local installation or area confinement facilities. Such facilities are designed and managed as short term pre and post trial confinement units, and lack both the physical plant and program opportunities that are available at the USDB, and which are recognized as desirable for longer term confinees.

Students of correctional trends cite a number of factors behind the increase in the overcrowding dilemma being experienced throughout the country: the post war "baby boom," longer sentences, decreased paroles, mandatory sentences, increased police and court efficiency, unemployment, and most of all the demands of the general public for more severe punishment of criminals (Gettinger, 1983).

While many of these factors are thought to contribute to the overcrowding problem within the civilian prisons and jails, it is unlikely that they play a significant part in the problems beginning to be felt at the USDB. Indeed, due to the restricted military justice environment caused by limited jurisdiction, several factors could not be at all related. For example, while the post World War II baby boom may be considered a possible contributing factor to overcrowding in civilian prisons, this could not be the case with the increase in prisoner population at the USDB where the significant population increase began in 1981 when the baby boom was 29-36 years of age and the population of the Army was at its fourth lowest level in 30 years (see Table 2).

Table 2
Armed Forces End Strength Population Per
Fiscal Year as Indicated

Fiscal Year	Army	Navy	Marines	Air Force
30 June 1971	1,123,482	623,023	212,369	755,107
30 June 1972	810,649	587,817	198,238	725,635
30 June 1973	800,523	564,308	196,098	690,999
30 June 1974	782,897	545,668	188,802	643,795
30 June 1975	783,907	534,884	195,951	612,551
^a 30 June 1976	778,978	524,476	192,336	585,207
^a 30 September 1976	782,230	527,595	189,785	583,078
30 September 1977	781,763	529,697	191,641	570,479
30 September 1978	771,138	530,059	190,755	569,491
30 September 1979	758,356	521,681	185,187	559,220
30 September 1980	776,536	527,153	188,469	557,969
30 September 1981	781,042	540,219	190,620	570,302
30 September 1982	780,391	552,996	192,380	582,845

^aNote: Indicates transition year, fiscal year extended from June 1976 to September 1976.

Source: U.S. Government Federal Budget, Fiscal Years 1971-1981.

The purpose of this chapter, then, will be to depict and explain statistical data from the USDB that relate to the inmate population, admissions, releases and lengths of stay. Analysis of these data may help determine the cause of the rapid increase in the USDB population. Identification of a cause could lead to policy determination that could relieve the developing overcrowding problems. If no such cause is identified or if a cause is identified but no corrective action is taken, the data may be used to develop a simulation model which may be used to demonstrate how continuation of the present policies of the military justice system may affect future operations and requirements of military corrections.

Methodology

Goals and Objectives

The purpose of this thesis is to accomplish the following goals and objectives: (1) to briefly describe the history and role of the USDB as part of military corrections; (2) to describe the philosophical and organizational context of the USDB within the military justice system; (3) to describe and analyze the population dynamics of the USDB over the past 10 years; and (4) to assist in future planning by simulating the effects on future populations of changes in admission rates or rates of time served at the USDB.

Sources of Data

All statistical data concerning population, numbers of admissions, and numbers of releases were obtained from official historical records at

the USDB, or from the U.S. Army Command and General Staff College Library at Fort Leavenworth, Kansas during a personal visit to Fort Leavenworth and the USDB in January 1983. The library of the U.S. Army Command and General Staff College serves as a central repository of historical records of the U.S. Army in general, and of the activities located at Fort Leavenworth specifically. Other sources of data that were not available from on site sources at Fort Leavenworth were obtained from records made available by the Department of the Army Office of the Deputy Chief of Staff for Personnel, and from government documents available through the facilities at the Sam Houston State University Library.

Time Series

Official historical manpower accountability records were utilized to obtain population changes at the USDB during a slightly more than 10 year period, extending backwards in time from the latest available population records. The period of analysis covered the time period 1 July 1972 through 1 November 1982. All monthly population changes, monthly admissions and monthly releases were keyed to these months which were numbered consecutively from 1 through 125, beginning with the 1 July 1972 date. For ease in table and figure analysis, a reference key is provided as shown in Table 3.

Table 3

Reference Key of Sequence Numbers to Month/Year

No. Month/Year	No. Month/Year	No. Month/Year	No. Month/Year
1 - Jul 1972	33 - Mar 1975	64 - Oct 1977	95 - May 1980
2 - Aug 1972	34 - Apr 1975	65 - Nov 1977	96 - Jun 1980
3 - Sep 1972	35 - May 1975	66 - Dec 1977	97 - Jul 1980
4 - Oct 1972	36 - Jun 1975	67 - Jan 1978	98 - Aug 1980
5 - Nov 1972	37 - Jul 1975	68 - Feb 1978	99 - Sep 1980
6 - Dec 1972	38 - Aug 1975	69 - Mar 1978	100 - Oct 1980
7 - Jan 1973	39 - Sep 1975	70 - Apr 1978	101 - Nov 1980
8 - Feb 1973	40 - Oct 1975	71 - May 1978	102 - Dec 1980
9 - Mar 1973	41 - Nov 1975	72 - Jun 1978	103 - Jan 1981
10 - Apr 1973	42 - Dec 1975	73 - Jul 1978	104 - Feb 1981
11 - May 1973	43 - Jan 1976	74 - Aug 1978	105 - Mar 1981
12 - Jun 1973	44 - Feb 1976	75 - Sept 1978	106 - Apr 1981
13 - Jul 1973	45 - Mar 1976	76 - Oct 1978	107 - May 1981
14 - Aug 1973	46 - Apr 1976	77 - Nov 1978	108 - Jun 1981
15 - Sep 1973	47 - May 1976	78 - Dec 1978	109 - Jul 1981
16 - Oct 1973	48 - Jun 1976	79 - Jan 1979	110 - Aug 1981
17 - Nov 1973	49 - Jul 1976	80 - Feb 1979	111 - Sep 1981
18 - Dec 1973	50 - Aug 1976	81 - Mar 1979	112 - Oct 1981
19 - Jan 1974	51 - Sep 1976	82 - Apr 1979	113 - Nov 1981
20 - Feb 1974	52 - Oct 1976	83 - May 1979	114 - Dec 1981
21 - Mar 1974	53 - Nov 1976	84 - Jun 1979	115 - Jan 1982
22 - Apr 1974	54 - Dec 1976	85 - Jul 1979	116 - Feb 1982
23 - May 1974	55 - Jan 1977	86 - Aug 1979	117 - Mar 1982
24 - Jun 1974	56 - Feb 1977	87 - Sep 1979	118 - Apr 1982
25 - Jul 1974	57 - Mar 1977	88 - Oct 1979	119 - May 1982
26 - Aug 1974	58 - Apr 1977	89 - Nov 1979	120 - Jun 1982
27 - Sep 1974	59 - May 1977	90 - Dec 1979	121 - Jul 1982
28 - Oct 1974	60 - Jun 1977	91 - Jan 1980	122 - Aug 1982
29 - Nov 1974	61 - Jul 1977	92 - Feb 1980	123 - Sep 1982
30 - Dec 1974	62 - Aug 1977	93 - Mar 1980	124 - Oct 1982
31 - Jan 1975	63 - Sep 1977	94 - Apr 1980	125 - Nov 1982
32 - Feb 1975			

Population Data

The raw data obtained at the USDB included the following:

- (a) End of month population.
- (b) Data on admissions.
- (c) Data on releases.

End of month population. These data represent the total number of inmates assigned cell space at the USDB and include those prisoners who are away from the prison on temporary furlough or for medical treatment or care at an off post hospital. The population total listed throughout the chapter represents the end of month population as of midnight of the day preceding each respective month. For example, the population total of 907 on 1 July 1972 (month number 1) represents the total inmate population as of midnight 30 June 1972.

Admissions. These data represent all newly arriving prisoners who require new cell space. When inmates leave the USDB for only short temporary periods, their cell spaces are normally kept for them until their return. Those who leave on parole lose their cell space and are considered new arrivals if they violate parole and are subsequently returned to prison at the USDB.

Releases. These data represent the total number of individuals released from the prison due to completion of sentence, being placed on parole, or transfer to another prison or the Army Correctional Agency, Fort Riley, Kansas.

^aThe raw data described above was used to construct several additional tables and graphs which more clearly illustrate the relationship and dynamics involved in the population at the USDB. These variables include:

1. The ratio of admissions to releases over time (125 months).
2. Releases as a percent of the entire inmate population.
3. Admissions as a percent of the entire inmate population.
4. Percent change in population over time (month, quarter, year).
5. Admission cohort time served.

Population Dynamics

Components of Population

There is a simple and somewhat deterministic relationship between admissions, time served, and the total population of the prison. Knowledge of any two will determine the third. Thus ... [to] know the number of people to be admitted in the future [plus the number currently there] and ... [being able to] calculate likely time served, the total population can be reasonably estimated (Friel, 1982:38).

In short, population is a function of admissions and time served or, of admissions plus current population minus releases.

End of Month Population

During the period of this study the inmate population at the USDB has changed direction several times, although not erratically so. Table 4 and Figure 1 illustrate the point that the population fluctuations during the period of this study were generally gradual and steady. Of the

^aNote. Additional raw data see Appendix A.

Table 4

Months 1 through 125 End of Month Population

Month/Population		Month/Population		Month/Population		Month/Population	
1 -	907	33 -	1071	64 -	914	95 -	1319
2 -	892	34 -	1119	65 -	846	96 -	1308
3 -	865	35 -	1146	66 -	799	97 -	1342
4 -	854	36 -	1147	67 -	791	98 -	1306
5 -	849	37 -	1186	68 -	806	99 -	1296
6 -	853	38 -	1170	69 -	796	100 -	1356
7 -	888	39 -	1210	70 -	825	101 -	1339
8 -	915	40 -	1208	71 -	829	102 -	1326
9 -	960	41 -	1216	72 -	892	103 -	1342
10 -	992	42 -	1180	73 -	786	104 -	1309
11 -	1108	43 -	1214	74 -	797	105 -	1320
12 -	1154	44 -	1213	75 -	824	106 -	1369
13 -	1157	45 -	1222	76 -	786	107 -	1373
14 -	1167	46 -	1156	77 -	832	108 -	1410
15 -	1189	47 -	1158	78 -	793	109 -	1409
16 -	1139	48 -	1163	79 -	780	110 -	1410
17 -	1090	49 -	1158	80 -	825	111 -	1431
18 -	979	50 -	1122	81 -	900	112 -	1407
19 -	1026	51 -	1097	82 -	943	113 -	1435
20 -	1101	52 -	1111	83 -	1003	114 -	1414
21 -	1150	53 -	1073	84 -	1048	115 -	1421
22 -	1266	54 -	1011	85 -	1048	116 -	1438
23 -	1344	55 -	1042	86 -	1079	117 -	1455
24 -	1381	56 -	1036	87 -	1114	118 -	1464
25 -	1301	57 -	1036	88 -	1150	119 -	1441
26 -	1264	58 -	1066	89 -	1162	120 -	1409
27 -	1155	59 -	1071	90 -	1154	121 -	1413
28 -	1157	60 -	1043	91 -	1198	122 -	1422
29 -	1128	61 -	988	92 -	1230	123 -	1455
30 -	1023	62 -	946	93 -	1259	124 -	1436
31 -	1061	63 -	931	94 -	1317	125 -	1438
32 -	1068						

LEGENDS HAVE BEEN MODIFIED TO AVOID DUPLICATION

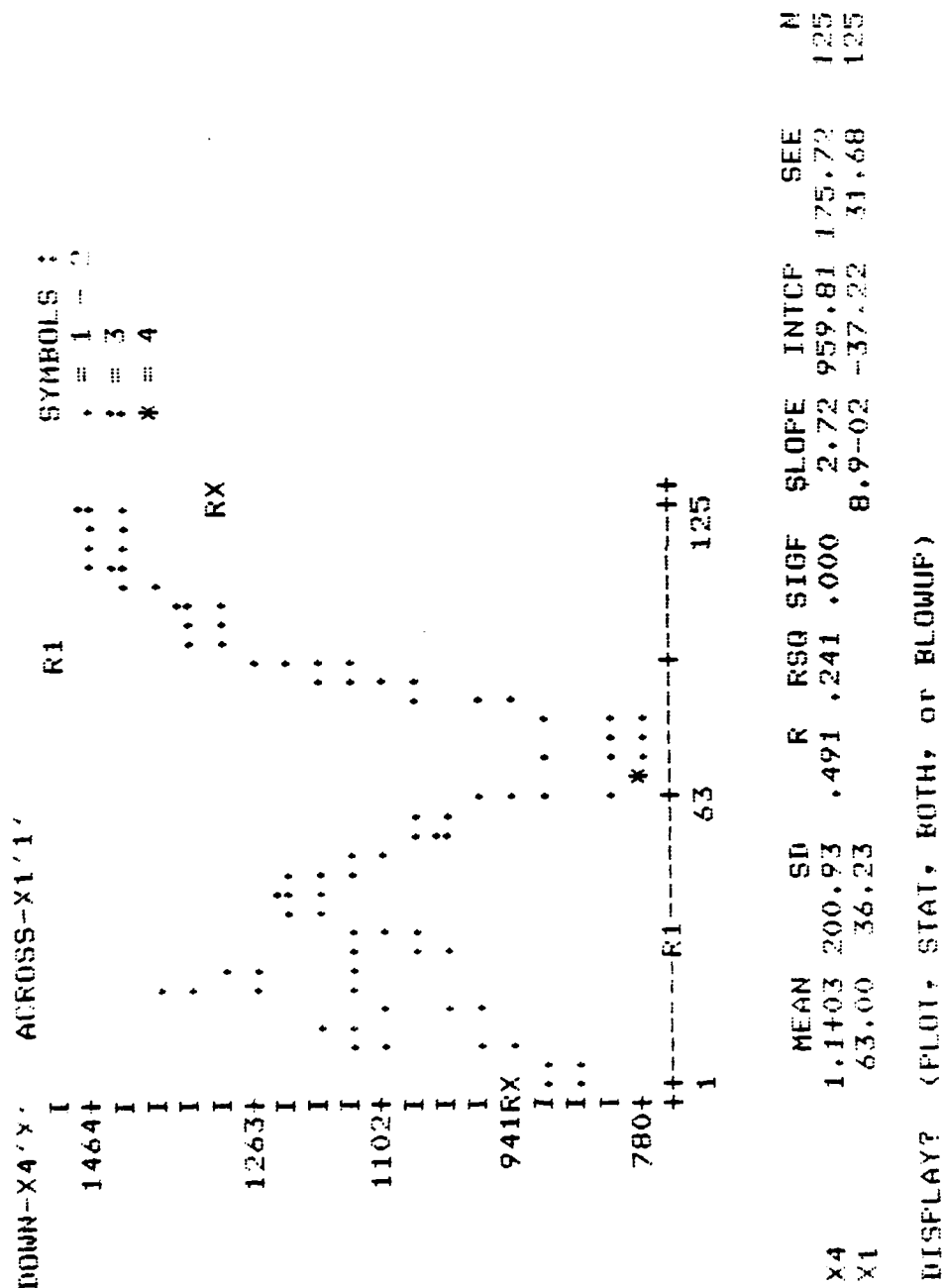


Figure 1

End of Month Population of USDB:
1 Jul 1972 - 1 Nov 1982

several changes in inmate population the most dramatic of these occurred in the late 1970s and early 1980s. It was during that time that the population began to rise dramatically from a population that was previously among the lowest in post World War II history.

It should be pointed out that another time of very low prisoner population at the USDB was the very beginning of this period of study, at a time when the Army strength levels were still slightly swollen from its Viet Nam era level. This was also a time of adjustment to the concept of the All Volunteer Army, a concept which is considered by many as being responsible for lowered standards of education, intelligence and overall quality of soldiers. During the early days of the All Volunteer Army concept, recruiters were frequently forced to make compromises in the standards of quality among recruits in order to meet demanding recruitment quotas. For these reasons and others, many professional Army personnel expected and anticipated severe training, disciplinary, and motivational problems. In many cases, these expectations were met, although the data concerning inmate population at the USDB do not reflect this fact.

In order to enhance appreciation of the fluctuating population over the period of time of this study, Table 5 is provided. The information provided tracks the movement of prisoner population by percent change over monthly, quarterly, and annual periods of time. The amount of population change is parallel with those of Figure 1; however, their quantification over various lengths of time helps in illustrating the magnitude of population change during these periods.

Table 5
Percent Change in Population Over Time by Month, by Quarter, and by Year

Month	Percent Change	Quarter	Percent Change	Year	Percent Change
1 -	.00	1972 - 3 -	.00	1972 -	.00
2 -	-1.60				
3 -	-3.12				
4 -	-1.28	1972 - 4 -	-6.20		
5 -	-.58				
6 -	.46				
7 -	3.94	1973 - 1 -	3.82		
8 -	2.95				
9 -	4.68				
10 -	3.22	1973 - 2 -	10.48		
11 -	10.46				
12 -	3.98				
13 -	.25	1973 - 3 -	14.26	1972 -	21.60
14 -	.85				
15 -	1.85				
16 -	-4.38	1973 - 4 -	-1.58		
17 -	-4.49				
18 -	-11.33				
19 -	4.58	1974 - 1 -	-11.01		
20 -	6.81				
21 -	4.26				
22 -	9.16	1974 - 2 -	18.95		
23 -	5.80				
24 -	2.67				
25 -	-6.14	1974 - 3 -	2.69	1974 -	11.06
26 -	-2.92				
27 -	-9.43				
28 -	.17	1974 - 4 -	-12.44		
29 -	-2.57				
30 -	-10.26				
31 -	3.58	1975 - 1 -	-9.04		
32 -	.65				
33 -	.28				
34 -	4.28	1975 - 2 -	5.18		
35 -	2.35				
36 -	.08				
37 -	3.28	1975 - 3 -	5.73	1975 -	-9.69
38 -	-1.36				
39 -	3.30				
40 -	-.16	1975 - 4 -	1.82		
41 -	-.65				
42 -	-3.05				
43 -	2.80	1976 - 1 -	.49		
44 -	-.08				
45 -	.73				
46 -	-5.70	1976 - 2 -	-5.01		
47 -	.17				
48 -	.42				
49 -	-.43	1976 - 3 -	.17	1976 -	-2.41
50 -	-3.20				
51 -	-2.27				
52 -	1.26	1976 - 4 -	-4.23		
53 -	-3.54				
54 -	-6.13				
55 -	2.97	1977 - 1 -	-6.62		
56 -	-.57				
57 -	.00				
58 -	2.81	1977 - 2 -	2.25		
59 -	.46				
60 -	-2.68				

Table 5--Continued

Month	Percent Change	Quarter	Percent Change	Year	Percent Change
61 -	-5.56	1977 - 3 -	-7.89	1977 -	-17.20
62 -	-4.43				
63 -	-1.61	1977 - 4 -	-6.09		
64 -	-1.86				
65 -	-8.03				
66 -	-5.88	1978 - 1 -	-15.54		
67 -	-1.01				
68 -	1.86				
69 -	-1.25	1978 - 1 -	4.12		
70 -	3.51				
71 -	.48				
72 -	7.06				
73 -	-13.68	1978 - 3 -	-4.96	1978 -	-25.69
74 -	1.38				
75 -	3.27				
76 -	-4.83	1978 - 4 -	.06		
77 -	5.52				
78 -	-4.91				
79 -	-1.66	1979 - 1 -	-7.76		
80 -	5.45				
81 -	8.33				
82 -	4.55	1979 - 2 -	17.28		
83 -	5.98				
84 -	4.29				
85 -	.00	1979 - 3 -	10.01	1979 -	25.00
86 -	2.87				
87 -	3.14				
88 -	3.13	1979 - 4 -	+6.86		
89 -	1.03				
90 -	0.69				
91 -	3.67	1980 - 1 -	4.00		
92 -	2.60				
93 -	2.30				
94 -	4.40	1980 - 2 -	9.03		
95 -	.15				
96 -	-.84				
97 -	2.53	1980 - 3 -	1.86	1980 -	21.90
98 -	-2.75				
99 -	-.77				
100 -	4.42	1980 - 4 -	1.03		
101 -	-1.26				
102 -	-.98				
103 -	1.19	1981 - 1 -	-1.04		
104 -	2.52				
105 -	.83				
106 -	3.57	1981 - 2 -	1.97		
107 -	.29				
108 -	2.62				
109 -	-.07	1981 - 3 -	2.83	1981 -	4.75
110 -	.07				
111 -	1.46				
112 -	-1.70	1981 - 4 -	-.14		
113 -	1.95				
114 -	-1.48				
115 -	.49	1982 - 1 -	.98		
116 -	1.18				
117 -	1.16				
118 -	.61	1982 - 2 -	2.93		
119 -	-1.59				
120 -	-2.27				
121 -	.28	1982 - 3 -	-3.60	1982 -	.28
122 -	.63				
123 -	2.26				
124 -	-1.32	1982 - 4 -	1.60		
125 -	.13				

History of Admissions

Figure 2 illustrates the monthly admissions over the 125 month time period of this study. The pattern of both increases and decreases as illustrated reflect the same pattern as Figure 1 which depicts overall population over the same period of time. It may be considered significant that a substantial rise in the number of admissions begins to be observed at about the same time as the overall population begins to show a similar rise, indicating that the rise in population cannot be attributed solely to increased sentence lengths, a pattern which also seemed to be emerging concurrently. It should also be noted that the drastic decline in numbers of admissions during the final months of this study is a reflection of having reached the authorized maximum number of prisoners, and subsequently limiting the numbers of admissions. This does not, however, account for a similar decline in the number of releases from the USDB during the same time period.

History of Releases

Figure 3 represents number of releases from the USDB during the 125 month period of this study. Analysis of this figure reveals a significant similarity to the number of admissions as illustrated in Figure 2. This could be attributed to conscious management controls over input (admissions) and out flow (releases) in order to maintain control over the prison population. A rapidly developed decrease in releases toward the final months of this period of study can be attributed to increased sentence length, a subject which will be addressed in greater detail below.

LEGENDS HAVE BEEN MODIFIED TO AVOID DUPLICATION

DOWN-X2'X' ACROSS-X1'1'

SYMBOLS :

• = 1 - 2

• = 3

* = 4

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MEAN	SD	R	RSQ	SIGF	SLOPE	INTCP	SEE	N
142.34	47.57	-.173	.030	.027	-.23	156.67	47.05	125
63.00	36.25				-.13	81.78	35.83	125

DISPLOT (PLOT, STAT, BOTH, or BLOWUP)

Figure 2

Monthly Admissions

LEGENDS HAVE BEEN MODIFIED TO AVOID DUPLICATION

DOWN-X3'X' ACROSS-X1'1'

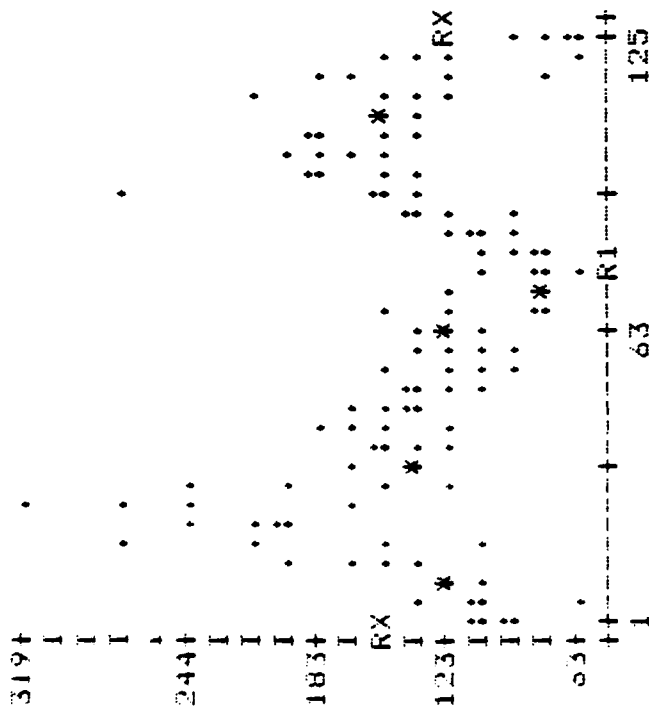
R1

SYMBOLS :

. = 1

: = 2

* = 3



DISPLAY (PLOT, STAT, BOTH, or BLOWUP)

Figure 3

Monthly Releases

Interaction: Admissions to Releases

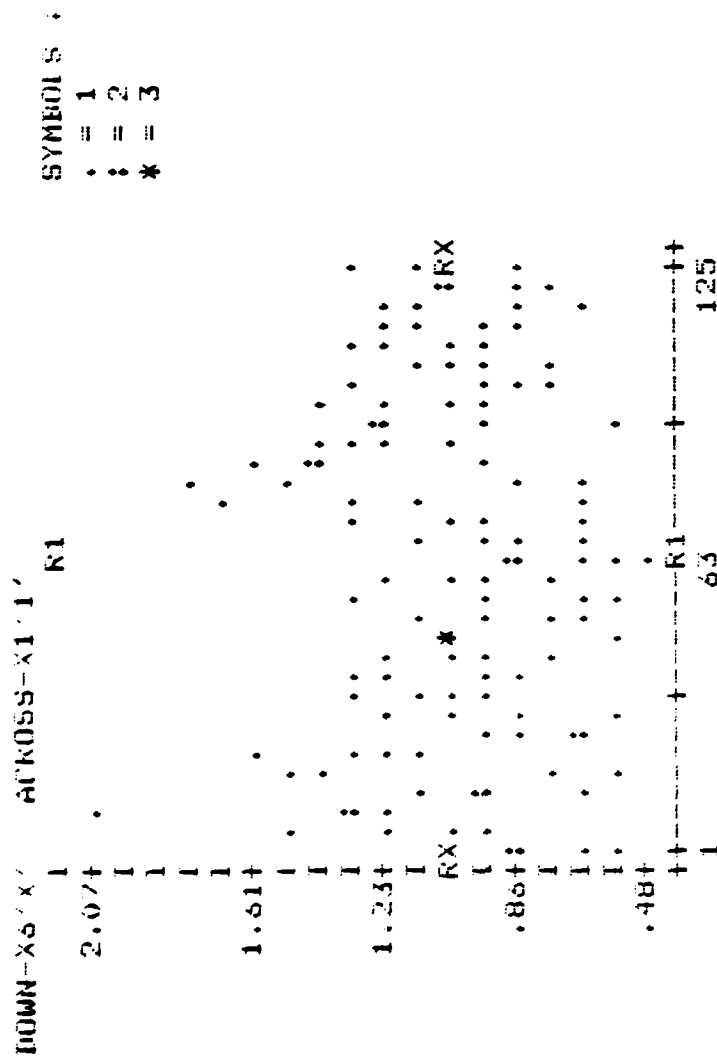
Figure 4 illustrates the ratio of admissions to releases, by month over the period of this study. Analysis of these figures results in no noticeable patterns or trends which could be used to explain the dynamics of the inmate population.

Another manner of examining the population is viewing admissions and releases in proportion to the overall population. These values, as illustrated in Figures 5 and 6, give the reader a better idea of the relative stability of the population and the significance of sentence length as compared to admissions in the development of an overcrowding situation. In the case of the USDB, these figures illustrate the relationship of fewer releases to increasing prisoner population. They also illustrate the great variation, over time, of the rates of monthly admissions and releases to the overall population. In the case of admissions, for example, during the earlier periods of the time, monthly admissions accounted for more than one prisoner out of five in the entire population, while later on, the admissions accounted for less than one out of twenty.

Time Served

Recognizing that the incarcerated population is a function of the number of commitments to prison and the length of stay in prison for those offenders, it became necessary to develop a measure of length of incarceration. The state of Colorado utilizes a Commitment Cohort Propagation Matrix as a means of estimating length of stay which has been adopted for use in the present study (see Appendix B) (Crago, cited in Friel, 1982).

LEGENDS HAVE BEEN MODIFIED TO AVOID DUPLICATION



	MEAN	SD	R	RSQ	SIGF	SLOPE	INTCP	SEE	N
X6	1.05	.28	.002	.000	.491	1.7-05	1.05	.28	125
X1	63.00	36.23				.27	62.71	36.38	125

DISPLAY (PLOT, STAT, BOTH, OR BLOWUP)

Figure 4

Monthly Admissions to Release Ratio

LEGENDS HAVE BEEN MODIFIED TO AVOID DUPLICATION

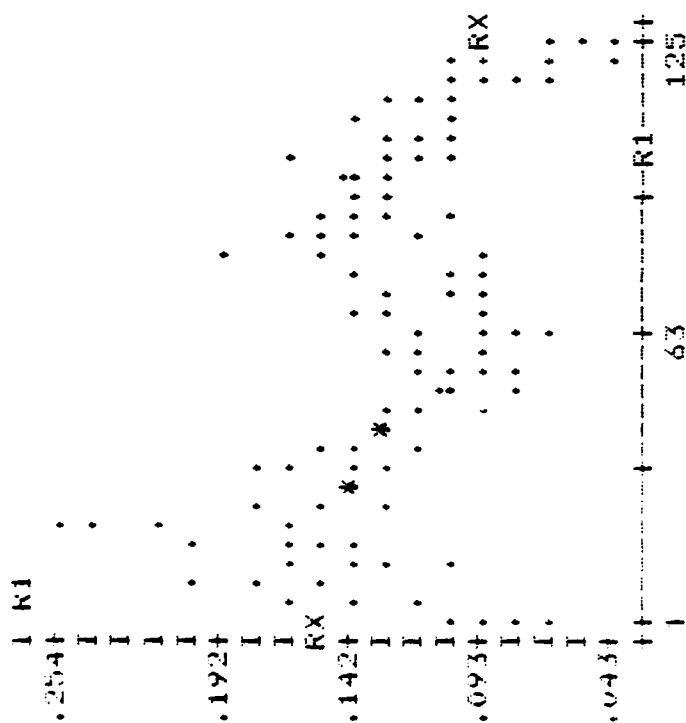
DOWN-XB X ACROSS-XI XI

SYMBOLS :

• = 1 - 2

• = 3

* = 4



	MEAN	SD	R	RSQ	SIGF	SLOPE	INTCP	SEE	N
XB	.13	3.8-02	-.433	.188	.000-4.3-04	.15	3.2-02	125	125
XI	63.00	30.23				-438.54	118.51	32.78	125

DISPLAY (PLOT, STAT, BOTH, or BLOWUP)

Figure 5

Monthly Admissions: Percent of Population

LEGENDS HAVE BEEN MODIFIED TO AVOID DUPLICATION

DOWN-X2-X ACROSS-X1-X

SYMBOLS :

. = 1

: = 2

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	DEAN	SD	R	RSQ	SIGF	SLOPE	INTCP	SEE	N
X7	.12	3.8-02	-.426	.181	.000-4.4-04	.15	3.4-02	1.25	125
X1	63.00	35.23			-409.29	114.13	32.92	1.25	125

DISPLOT (PLOT) SIGF, BOTH, OF BLOWUP)

Figure 6

Monthly Releases: Percent of Population

Through the use of the Commitment Cohort Matrix in this study it became possible to observe the changing patterns of aggregate time served by inmates of the USDB. Analysis of the time served matrix of the 125 month period involved indicates that aggregate time served varied from a low of 4.95 months in April 1974 to a high of 12.96 months in November 1981, the last month for which there was sufficient information to calculate time served. Table 6 and Figure 7 illustrate that the aggregate cohort time served fluctuated during the period of study somewhat, and the increase from the low of 4.95 months to the high of 12.96 has not been a regular or steady incline, although the last few months indicate the beginning of a significant increase in time served.

Summary

The results of the analysis on time served suggest that a possible reason for the steady increase in population at the USDB is increasing time served by prisoners. This is a reason other than the one usually given as the cause of the increased population: that of higher admissions. While the data observed in this chapter confirm that the steady increase in USDB population occurred at a time of increasing admissions, past history has shown that other periods of increasing admissions have not resulted in correspondingly high prisoner populations. If aggregate time served is increasing significantly, this condition could account for the cause of the prison overcrowding, or at least seriously aggravate the situation of correspondingly increased numbers of admissions.

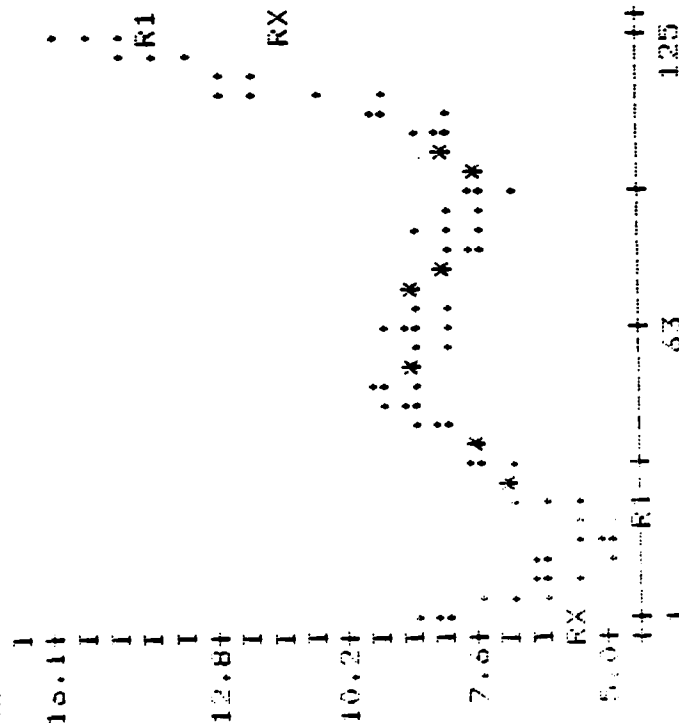
Table 6
Monthly Admission Cohort Time Served

No. Month	No. Month	No. Month	No. Month
1 - 9.00	33 - 7.24	64 - 9.00	95 - 7.55
2 - 8.44	34 - 7.37	65 - 8.47	96 - 7.72
3 - 8.00	35 - 7.40	66 - 8.56	97 - 7.71
4 - 8.00	36 - 7.70	67 - 8.64	98 - 8.02
5 - 7.55	37 - 7.67	68 - 8.40	99 - 8.07
6 - 7.26	38 - 7.79	69 - 8.72	100 - 8.35
7 - 7.00	39 - 7.61	70 - 8.66	101 - 8.53
8 - 6.57	40 - 7.79	71 - 8.87	102 - 8.58
9 - 6.64	41 - 8.05	72 - 8.91	103 - 8.80
10 - 6.57	42 - 8.25	73 - 8.88	104 - 8.50
11 - 6.45	43 - 8.38	74 - 8.60	105 - 8.56
12 - 6.03	44 - 8.72	75 - 8.54	106 - 8.57
13 - 6.36	45 - 8.92	76 - 8.35	107 - 9.34
14 - 6.56	46 - 9.05	77 - 8.17	108 - 9.63
15 - 6.47	47 - 9.24	78 - 8.00	109 - 9.88
16 - 5.00	48 - 9.38	79 - 7.35	110 - 9.89
17 - 5.96	49 - 9.58	80 - 7.48	111 - 11.14
18 - 5.41	50 - 9.79	81 - 7.65	112 - 12.37
19 - 5.16	51 - 9.30	82 - 7.81	113 - 12.96
20 - 5.20	52 - 9.17	83 - 8.67	114 - 11.95
21 - 5.00	53 - 9.00	84 - 8.11	115 - 12.33
22 - 5.95	54 - 8.87	85 - 8.00	116 - 12.71
23 - 5.43	55 - 8.67	86 - 8.13	117 - 13.09
24 - 5.77	56 - 8.74	87 - 8.00	118 - 13.47
25 - 5.59	57 - 8.55	88 - 7.80	119 - 13.85
26 - 6.70	58 - 8.38	89 - 7.59	120 - 14.23
27 - 6.60	59 - 8.68	90 - 7.56	121 - 14.61
28 - 6.91	60 - 8.84	91 - 7.29	122 - 14.99
29 - 7.01	61 - 8.75	92 - 7.41	123 - 15.37
30 - 7.05	62 - 8.75	93 - 7.49	124 - 15.75
31 - 7.08	63 - 9.52	94 - 7.52	125 - 16.13
32 - 7.25			

LEGENDS HAVE BEEN MODIFIED TO AVOID DUPLICATION

DOWN-25'X' ACROSS-X1'1'

SYMBOLS :
 . = 1
 : = 3
 * = 4



	MEAN	SD	R	RSQ	SIGF	SLOPE	INTCP	SEE	N
X5	8.56	2.24	.703	.494	.000	4.4-02	5.81	1.60	125
X1	63.00	36.23				11.66	-34.21	25.66	125

DISPLAY (PLOT, STAT, BOTH, or BLOWUP)

Figure 7

Monthly Admission Cohort Time Served

Chapter III will analyze the data further and will suggest some possible results of continuing the trend that the military justice system appears to be taking with regard to increasing inmate time served.

CHAPTER III

MEETING FUTURE NEEDS

The Army Correctional System

The Army has become increasingly aware that simple confinement of offenders does not solve the problem of crime. Intelligent treatment of the problem requires that everyone responsible in any manner for custody, treatment and training of military offenders be aware of all the conditions--economic, environmental, sociological and personal--which have been the cause of the criminal and antisocial tendencies of the prisoners. In this regard it becomes incumbent upon all the actors involved in military corrections to develop a thorough knowledge of the causes of crime and an understanding of the human approach to rehabilitation of the prisoner into either a productive soldier or a useful and law-abiding citizen (Army Field Manual (FM) 19-60, 1970).

To implement the above policy, and to accomplish the desired objectives of the Army Correctional Program, the Army has set forth the following specific policies in various regulations and directives, regarding post-trial, sentenced confinees:

1. Programs and procedures for custody, control, and treatment of prisoners will be corrective rather than punitive in nature. Such procedures require the following: (a) screening and professional evaluation of the individual prisoner; and (b) determination of the

individual prisoner's military training, work assignment and instructional needs on the basis of one of the following dispositions:

- (1) Return to duty.
- (2) Administrative separation from the service while in confinement.
- (3) Return to civil life with a punitive discharge.
- (4) Transfer to disciplinary barracks.
- (5) Transfer to Federal Correctional System.

2. Army policy, detailed in Army Regulation (AR) 633-10, encourages maximum utilization of the commander's authority to mitigate, remit or suspend unexecuted portions of court martial sentences in appropriate cases. This regulation also provides for clemency consideration for each prisoner at certain times, and for his restoration to duty when warranted.

3. Army Regulation (AR) 633-35 sets forth policy and provides guidance in the consideration of military prisoners for restoration to duty. This regulation outlines conditions under which qualified prisoners will be restored, and prescribes procedures to be followed by the prisoner, the responsible commander and appropriate staff agencies of the Department of the Army (FM 19-60, 1970).

Facilities of the System

The policies of the Army Correctional System are implemented through three types of facilities: (1) confinement facilities, (2) retraining brigades, and (3) disciplinary barracks (USDB). Of the three facility types, the one with the best programs for dealing with the long term offender is the USDB.

Local installation and area confinement facilities in both CONUS (Continental United States) and those Overseas (OCONUS) do provide limited counseling, administrative services, custodial supervision, and in some cases training and employment programs necessary to prepare prisoners for return to military duty, transfer to a correctional facility, or return to the civilian community when appropriate. Retraining brigades, the sole remaining one now known as the Army Correctional Activity, provide some specialized correctional programs for assigned personnel in a prisoner status, but the primary function is to conduct specialized training programs to non-prisoner trainees necessary to prepare them for continued military duty or return to civilian life (FM 19-60, 1970).

On the other hand, it is the USDB that is designed, organized and staffed to provide specialized correctional programs, professional evaluation, counseling, training, custody, and personnel administration necessary to meet the needs of the type of prisoner to be sentenced to a maximum security prison, of which the USDB is one. Not all prisoners though, those of whom meet the sentence requirement for being sent to the USDB, are able to take advantage of the facilities and programs that would be available to them if they were at the USDB. These prisoners are being confined at local confinement facilities, few of which are designed or constructed to meet the minimum needs of a long term offender. Likewise, few local confinement facilities are able to provide the security measures over inmates as well as the USDB can. For these reasons and others, every effort should be made so that persons who receive

sentences that meet the requirement of confinement to the USDB, are actually sent there in accordance with terms of the court imposed sentence.

Overcrowding

The chief cause of the recent backlog of prisoners awaiting transfer to the USDB is the fact that the USDB is now operating within 96% of its maximum capacity of 1503 inmates and cannot indiscriminately accept receipt of all prisoners sent to it via the military justice system.

Professional journals, popular magazines and books, and the mass media frequently focus on the universal problems of overcrowding in prisons and jails. In some states this has caused problems beyond the crisis level. Meeting difficult demands of court orders requiring correction of overcrowding, prison riots, and internal violence are causes of great concern nationally.

Compared to the many highly visible and widely publicized problems in prisons throughout the country, many of which appear to be almost totally out of control, the fact that the USDB is within 4% of its maximum population may appear insignificant in comparison. This is not the case however for two reasons: The first reason is the one discussed above concerning the backlog of 190 prisoners awaiting transfer to the USDB. While this number may not appear significant, it should be noted that the total (190) represents 11.6% of the total population that actually should be incarcerated within the confines of the USDB. Put another way, 11.6% of the prisoners sentenced to the USDB are not there. The second reason for concern with the population increase is the fact that the

population increase, up to the maximum capacity and higher, cannot be correlated with a similar increase in overall Armed Forces population or even by increased admissions. Evidence points to the fact that the recent increase in population at the USDB is a function of increased time served.

Historical Population Trend

The present population, although close to the maximum authorized is not the highest in history, and future building renovation plans are in existence which will increase the maximum number of prisoners. Historical records indicate that during periods of war time, the USDB population has been considerably higher than today's. During certain periods of World War II, more than 2000 prisoners were incarcerated at one time. Then, however, there were eleven Branch Disciplinary Barracks to handle the total Army prisoner population of 34,766 inmates. During the period of hostilities in Korea and Viet Nam, inmate population increased, but not to such a great extent as during World War II (Sapp, Note 4). As of 1979, there were no more Branch Disciplinary Barracks, and since then all long term offenders were supposed to be sent to the USDB.

During 1979, the total maximum capacity of the USDB was 1882 (Haines, Note 2) but due to remodeling and construction, the maximum capacity is now the previously listed 1503. Future plans call for new renovation of facilities which, when completed, will raise the maximum capacity to 1777 prisoners (McCotter, Note 1) but it is unknown when exactly this will take place.

In light of the above information it becomes apparent that the problem of overcrowding at the USDB is not of crisis proportions requiring sudden or drastic actions as they are in some state institutions. Rather, it should be acknowledged that the total prisoner population, including both the population presently there combined with those 190 prisoners awaiting transfer to the USDB are not benefitting to the optimal degree from the programs included in the Army Correctional System. A careful analysis of current trends and a projection of future needs should be made especially in light of the current trend toward increasing lengthening of time served.

One fact that cannot be ignored is the steadily rising inmate population of the past several years. If the trend should continue, Army policy makers may be forced to decide whether to keep adding to the backlog of prisoners awaiting transfer to the USDB, or to take other measures to make it possible for the system to function as it was designed.

Future Population

Predicting Future Needs

In order to adequately meet future needs of a prison, it becomes necessary to anticipate requirements and predict as accurately as possible the total number of prisoners that will be incarcerated at particular future times. Budgetary, capital construction, and personnel requirements are just a few of the considerations that require accurate short and long range predictions of future needs.

The rapidly increasing population at most state correctional institutions is the cause of great concern regarding correctional

forecasting today. The enormous costs involved in prison construction along with a great deal of accompanying political interest and controversy surrounding questions of capital construction require that accurate predictions of future needs be made. Inaccurate forecasting can easily result in inflated projections and subsequent overbuilding, or conversely; overly conservative estimates of future needs can be made which result in a shortage of cell space in relation to actual future needs.

Essentially, a forecasting model has two moving parts: an algorithm to predict future admissions and another to predict time served.

To forecast the future population, one need only add to the current population expected admissions, amortize the future population by some estimate of time served, and the result is the future population (Friel, 1982:9).

While this may sound simple in theory, it is much more complicated in fact. Developing accurate forecasts is a complex activity requiring not only technical expertise but also a thorough understanding of the workings of the criminal justice system and the impact of exogenous factors on the size and composition of the population (Friel, 1982).

All state correctional institutions employ some method of forecasting future needs. Some have proven to be more accurate than others, and many are suitable to their respective states but do not apply equally well to other states or over long periods of time even within the same state.

Control of Inmate Population

Civilian institution. Accurate predictions for both immediate and long term prisoner population needs are especially important at

institutions such as prisons that have little control over the input and outflow of prisoners. In most prisons the inmate population is a function of the number of prisoners sent to it by the courts, and the number that are released due to completion of sentence and parole. In such a situation control of inflated populations by the prison is limited to control of releases. In some cases, releases are not the result of completion of total sentence, or of parole being granted to low risk prisoners; instead, early releases of some prisoners are based upon the number of prisoners having reached a pre-determined limit of total population. The states of Michigan and Iowa are examples of such mandatory release laws which require that no new prisoners be accepted after a certain percentage of maximum population is reached. When such an event occurs, prisoners nearing completion of their sentences are released early to make room for the newly sentenced inmates (Gardner, 1982).

With the ability to affect prisoner populations limited to manipulation of releases from prison, and with little or no effect on control of the number of admissions or on sentence length, the need to predict what future populations are likely to be becomes mandatory so that future needs can be prepared for.

Military institution. The necessity for future predictions is not as great within the military, however, as it is in civilian institutions. The reason for this is the fact that whereas civilian institutions lack considerable control over the essential elements of population dynamics within their institutions, this is not the case in the military where the entire structure of military justice functions better as a total system. Input to certain institutions such as the USDB can be controlled, and

lengths of incarceration can be adjusted if required. The nature of the military organizational structure itself makes possible policy review and modification easier to accomplish than in a civilian environment in which similar decisions may require considerable legislature, executive and judicial concurrence. In contrast to civilian institutions then, which must be reactive to the numbers of prisoners sent to them for incarceration, the military can be proactive in its approach to controlling inmate population through deliberate efforts to establish goals and objectives of the correctional program, and then shaping the correctional environment through policy determination so that these objectives can be met. Where the civilian institutions are generally limited to adjusting to the situation, and at best can attempt to make accurate predictions in which to react to the population dynamics of the future, the military system has the capacity to actually affect those factors. The requirement then for the military justice system, of which military correction is a part, is not simply to predict future prisoner population requirements so that it can react to those needs, but rather to move a step ahead to actually controlling the future needs through careful policy determination and planning.

Policy Simulation

Present Trends

As explained previously, inmate population is a function of two factors: (1) number of admissions and (2) length of stay. The population at the USDB today is a result of these two factors. Chapter II described these factors and analyzed their effect upon the population

of the past 10 years. Policy determination affecting future military justice operational philosophy requires an understanding of the present situation, an assessment of the causes of that situation, and a projection of the results of various policy changes that could be initiated to affect the dynamics of the population at the USDB.

In order to effectively formulate plans and positive policy determination, an appreciation of the effects upon the inmate population by manipulation of two essential population factors is required. For example, during the past 24 months the average number of inmates taken into the USDB has been 136 per month, with an aggregate cohort time served of 8.81 months. At the conclusion of this study, however, the aggregate time served had increased to nearly 13 months (12.97). If such a situation continued, within 13 months the population of the USDB would be almost 1900 prisoners.

Cohort Time Served Matrix

The cohort time served matrix, as described in Appendix B, is a measure of the aggregate time served in prison by cohorts entering prison at a particular time. It is not the same as sentence length, or average length of stay in prison by any particular individual, but is an average of the total time served by a group (cohort) based upon admissions during a particular month. The components of the matrix are: (a) the number of admissions by month, (b) number of releases by month, (c) total prison population, and (d) total months served.

In Chapter II, the matrix was utilized to calculate the aggregate time served by prisoners at the USDB over months 1-113 of this study.

(Calculation of time served by a cohort using the matrix requires knowledge of certain numbers of monthly admissions following a cohort's entry into prison. Calculation of cohort's time served during months 114-125 could not be calculated because this required admission data from months 126 and forward, months that at the time of data collection had not yet occurred).

Construction of this matrix resulted in finding that aggregate time served varied from a relatively short 4.95 months to a high of 12.96 months, which occurred at month number 113.

The Cohort Matrix in Policy Simulation

Understanding the impact of number of admissions and the length of time served on the population of the USDB, it becomes possible to calculate the impact that adjustments to one or both of these population factors would have on future population of the USDB. Utilizing the cohort matrix, it is possible to simulate the results of changes in the length of time served or the number of monthly admissions. Knowing for example, that the admissions rate for months 119-125 was 80 prisoners per month, and utilizing the matrix, it is possible to predict the impact on the population of raising or lowering admissions to any other number. In the same manner it is possible to determine the effects of raising or lowering the length of time served on the future population.

Policy simulations utilizing the cohort matrix leads identification of population levels which may or may not be acceptable within the limits of the Army Correctional System. Through the use of simulation it is also possible to determine the time at which a particular population will

stabilize in size (known as months to equilibrium) as well as the number of months required to reach a predetermined percentage of capacity, which can function as an early warning indicator alerting correctional planners of developing overcrowding conditions.

Policy Simulation Technique

As in Chapter II where a cohort time served matrix was utilized to determine the length of time served, a similar matrix was developed in which estimates of the future population could be calculated for various values of time served. In the policy simulation model arbitrarily selected values of admissions and length of time served are substituted in the matrix. The final objective of the model is the calculation of the total prison population that would result from deliberate manipulation of the two population factors. For example, if the present USDB population of 1438 can be considered to be a function of 136 prisoners per month, and an aggregate length of stay of 12.97 months, how would the total population be affected if the admissions increased to 150 per month and aggregate length of stay decreased to 11 months? If, due to policy changes, the average rate of admissions and cohort time served increased as in the example, the end result would be a rise in population of 1650 prisoners. From the policy simulation model it can also be demonstrated that such changes in admissions and time served would cause the inmate population to exceed 95% of the total capacity by the ninth month after these policies are changed and that the population would stabilize by the 15th month at a constant value of 1650 prisoners.

Earlier in this chapter, it was stated that for the purposes of this study, it was impossible to historically calculate cohort time served beyond month 113, because calculation beyond that month relied upon admissions data for months in the future. In the policy simulation model, where the information sought was the effect upon population of manipulation of time served and admissions, several hypothetical values of admissions and time served were selected, and employed within the matrix. In the example given (Table 7) the effect of increasing monthly admissions to 150 and lowering the cohort time served to 11 months is illustrated.

Admissions Data

In the historical cohort time served matrix, calculation of time served could only be determined by also knowing the admissions data of future months. In this study, the future included any month beyond 125. Therefore, note that in the arrival column, month number 126 and those beyond list 150 as the number of monthly arrivals because that is one of the numbers being examined in this model for its impact on population. (Numbers of arrivals in the column prior to 126 are actual historical admissions).

Time Served Data

The other component of population is time served (TS). Remembering that the purpose of this model is to determine the impact (on population) of manipulating admissions and time served, a further reminder is given that in the historical cohort model, calculation of the value of aggregate

Table 7
Policy Simulation Matrix

[illegible]

time served beyond month number 113 could not be made because its value was based upon data that had not yet occurred (beyond month 125).

The purpose of this simulation, however, is to calculate the effects of changes in admission while decreasing time served to 11 months; therefore, 11 months was substituted in the TS column, as a means of calculating the effects on the population. Since the last calculated time served value was 12.96 months (for month 113) and the matrix is utilized to calculate population with a TS factor of 11 months (a total value difference of nearly 2 months), the time served value was gradually reduced, by proportional increments, from 12.96 months to the value of 11 months. This action was taken to avoid gross distortions in the data that would result from a sudden drop of 2 months in the simulation model. This action has no bearing on the final results of the policy simulation, and has been noted here solely to explain why the TS totals drop incrementally from month number 114 to 120.

As has been noted, substitution of the pre-selected TS and admission values in the policy simulation model revealed that if the values remain constant, the prison immediately drops from 1438 prisoners to 1346, and continue to drop for 4 months, at which time the population again begins to increase. The increase continues until the 11th month, when the population stabilizes at 1650. This is identified as the equilibrium point, and shows the month after which the inmate population will not change as long as the admissions and time served remain constant.

One additional source of information is made possible from the simulation model. This is the identification of the month at which the population reaches a selected value (in this case 95% of the total USDB population capacity), which can serve as a warning to prison administrators of pending overcrowding that will result unless policy changes are made to affect current trends. In the case of the USDB, the month at which the total population exceeds 1427 inmates is easily observed and identifies the point in which policy changes regarding admissions and/or length of time served must be modified, or overcrowding will result.

Policy Simulation: Substituted Values

A series of simulations were conducted using the values for admissions and time served given in Table 8.

Table 8
Policy Simulation Substituted Data

Simulated Admission Rate/Per Month	Simulated Aggregate Length of Stay (in months)
50	9
100	11
150	13
200	15
250	

Policy Simulation Models Analysis

Procedure

Each value of admissions listed was combined with time served in Table 8, resulting in a total of 20 simulations. For example, the value of 50 admissions per month was calculated for cohort time served lengths of all four time served values and 15 months.

Resulting population totals and other associated data were calculated and the results are reported in Table 9. This table contains values obtained from the 20 simulations.

(a) The number of months required to reach equilibrium for each admission rate. For example, with admission rate of 50 and a time served of 9 months, equilibrium is reached on the 9th month.

(b) The inmate population at the time of equilibrium for each admission rate. Note that this is the maximum population that can be maintained from each respective admission rate for each length of time indicated. This population will remain stable as long as admission rate and time served remain constant. For example, with an admission rate of 50 and a time served of 9 months, population at equilibrium is 100.

(c) Month upon which the population will reach 95% of capacity. Note that in some simulations indicated with (*), the population at equilibrium are too low to ever reach 95% capacity, while those indicated by (**) have exceeded 95% capacity by the first month. For example, with an admission rate of 150 and a time served of 1 month, the population reaches 95% of the population on the 7th month.

Table 9
Admission Rate to Equilibrium

Admission Rate	Population Dynamics	9	Time Served		
			11	13	15
50	Months to Equilibrium	9	11	13	15
	Population at Equilibrium	450	550	650	750
	Months of 95% Capacity	*	*	*	*
100	Months to Equilibrium	9	11	13	15
	Population at Equilibrium	900	1100	1300	1500
	Months of 95% Capacity	*	*	*	*
150	Months to Equilibrium	9	11	13	15
	Population at Equilibrium	1350	1650	1950	2250
	Months of 95% Capacity	*	7	2	2
200	Months to Equilibrium	9	11	13	15
	Population at Equilibrium	1800	2200	2600	3000
	Months of 95% Capacity	7	3	1	1
250	Months to Equilibrium	9	11	13	15
	Population at Equilibrium	2250	2750	3250	3750
	Months of 95% Capacity	5	**	**	**

*Population rate insufficient to reach 95% capacity.

**Population rate began over the 95% capacity level.

Tables. Tables 10 through 14 list the inmate population by month, which result from varying monthly admissions while holding time served constant. The heavy line at the bottom of each column represents the point at which the population reaches equilibrium.

Also shown on the same tables is another heavy line indicating the point where the population exceeds 95% of the USDB capacity. This point is not indicated in all tables because in some simulations all listed totals exceed the 95% point, and in another simulation, the population total achieved equilibrium before approaching the 95% point.

Figures. Population data were also plotted and consolidated for various monthly admission rates (see Figures 8-12). Each figure represents the population dynamics of the simulated change in monthly admissions and time served. The figures illustrate changes in the simulated population over time. The point at which the population reaches equilibrium is represented by horizontal lines, and the number of months required to reach equilibrium are expressed by vertical lines connecting the number of months to the total population. All figures begin with the last available end of month population of 1438 prisoners. The dashed horizontal line represents 95% of the total USDB capacity.

Figure 8 and Table 10 represent an admission rate of 50 inmates per month. Policy changes limiting admissions to this unlikely number would result in a drastically lower population, with the maximum being 750 inmates, if time served were extended to 15 months. Historically, time served has been closer to 9-11 month level which, if employed in this simulation would result in a maximum population of 450-550 inmates.

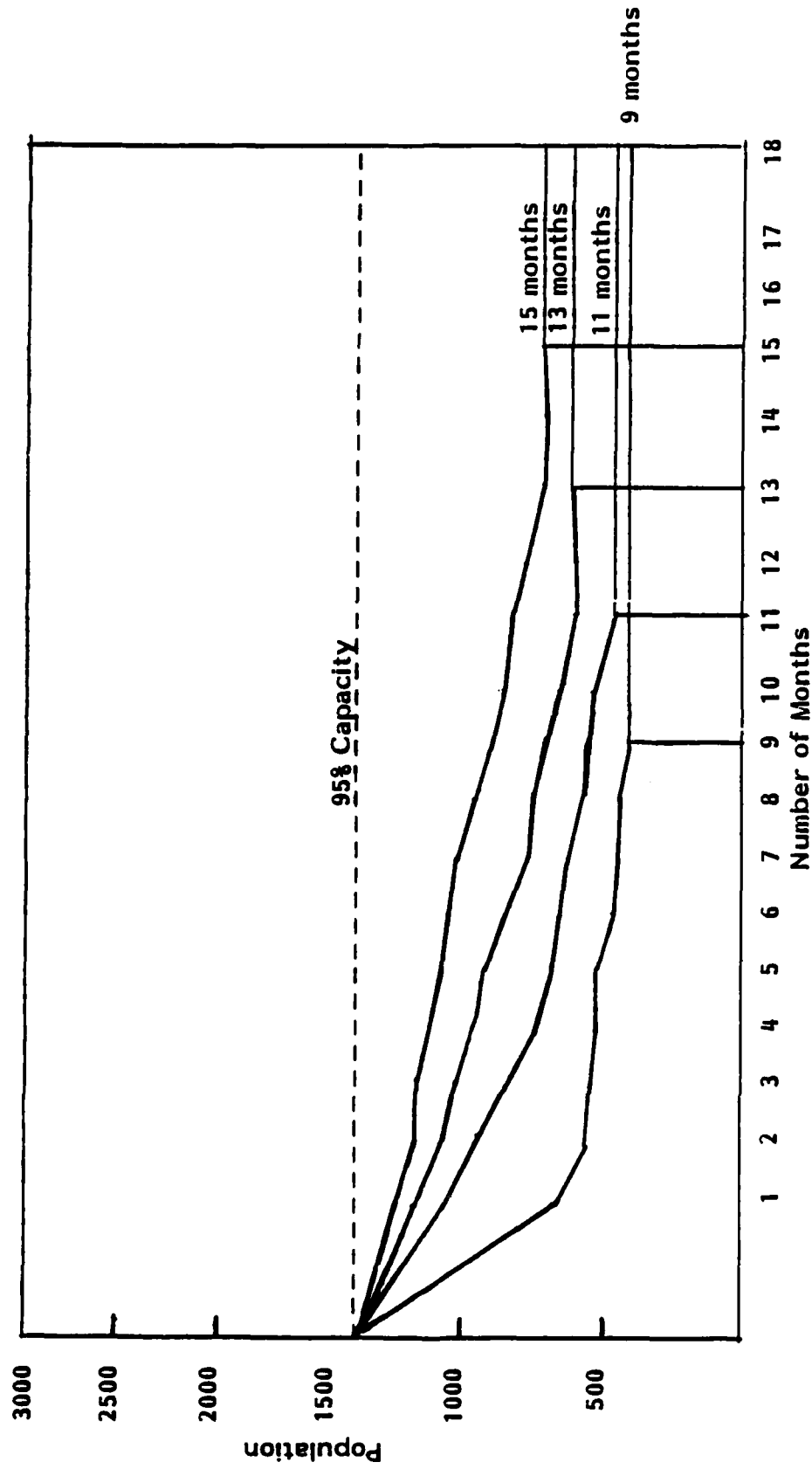


Figure 8

Population Dynamics: Admissions of 50 Per Month Over Time Served

Table 10

Results of Policy Simulation:
Admissions at 50 Per Month

Month	Time Served			
	9	11	13	15
1	1100	1246	1326	1326
2	752	1108	1227	1272
3	632	989	1153	1232
4	591	852	1098	1201
5	574	732	1013	1148
6	526	691	913	1106
7	488	674	832	1062
8	476	626	791	1013
9	450	588	774	932
10	450	576	726	891
11	450	550	688	874
12	450	550	676	826
13	450	550	650	788
14	450	550	650	776
15	450	550	650	750
16	450	550	650	750

*

*Dark line represents equilibrium point.

Figure 9 and Table 11 show the results of a simulation of 100 inmates per month over varying lengths of time served. In all but the extreme case of time served being 15 months, the inmate population remains below the 95% capacity level, until reaching the point of equilibrium. If controlling the population to below 95% capacity were to become a priority issue, limitations of admissions to 100 per month would result in populations as indicated in Figure 9.

Figure 10 and Table 12 represent the results of limiting admissions to 150 per month. One hundred fifty inmates per month is very near the average number of admissions to the USDB per month for the past 24 months. This figure is an excellent representation of how increasing the length of time served affects the total population. In this example, where the number of monthly admissions remains constant at 150, the population is 900 more when the aggregate time served is 15 months as opposed to 9 months.

Figure 11 and Table 13 represent population dynamics which result from an admission rate of 200 per month. As reflected in the figure, increasing time served radically changes the total population at the point of equilibrium, and compared to data in previous figures has at least as great an impact on total population as does an increase in monthly admissions.

Figure 12 and Table 14 represent the extreme example of drastically increasing the number of admissions and the length of time served. Such high admissions appear unlikely in peace time, but history has shown great increases in admissions, and consequently increases in population

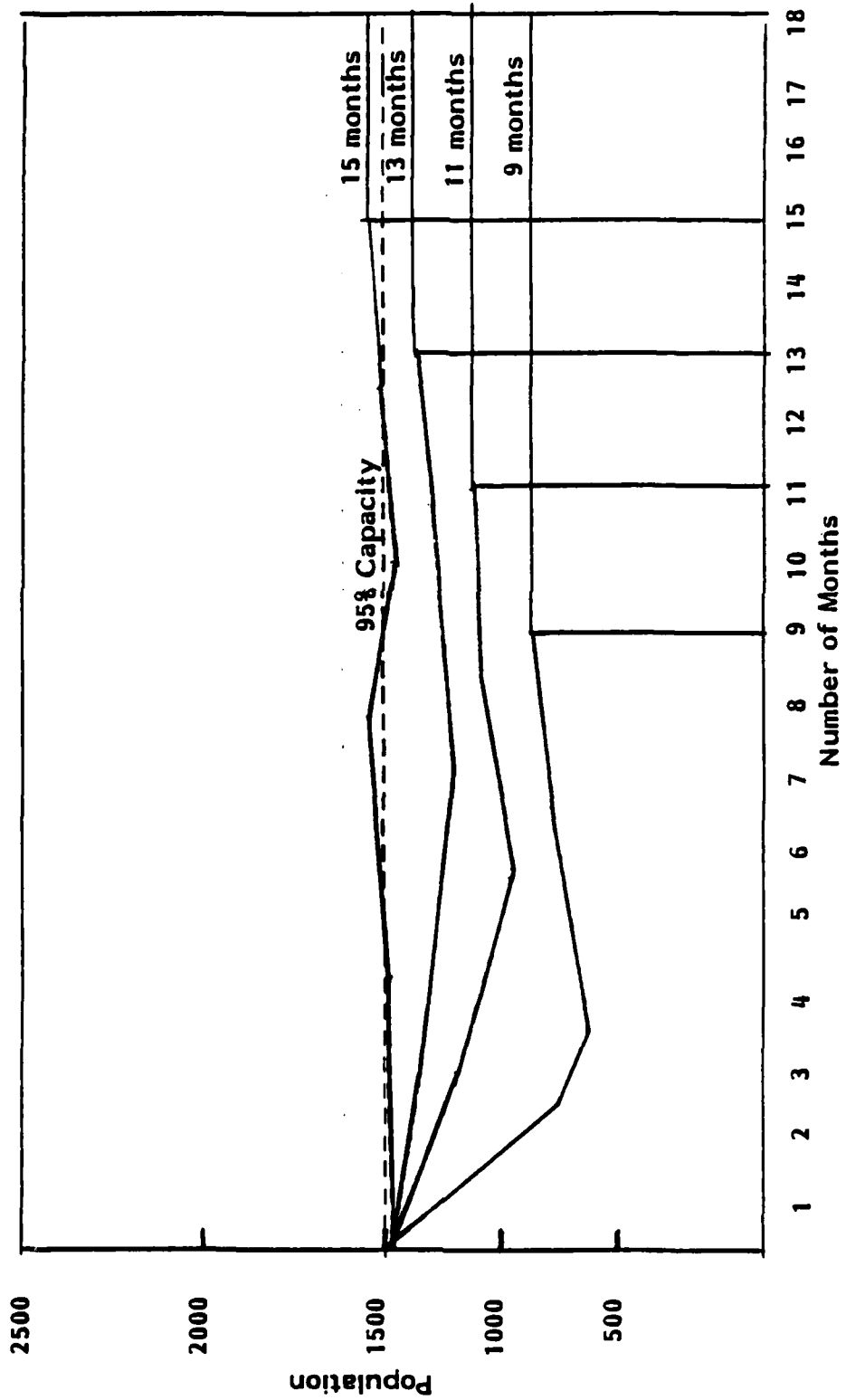


Figure 9

Population Dynamics: Admissions of 100 Per Month Over Time Served

Table 11
Results of Policy Simulation:
Admissions at 100 Per Month

Month	Time Served			
	9	11	13	15
1	1150	1296	1376	1376
2	852	1208	1327	1372
3	782	1139	1303	1382
4	791	1052	1298	1401
5	824	982	1263	1398
6	826	991	1213	1406
7	838	1024	1182	1412
8	876	1026	1191	1413
9	900	1038	1224	1382
10	900	1076	1226	1391
11	900	1100	1238	1424
12	900	1100	1276	1426
13	900	1100	1300	1438
14	900	1100	1300	1476
15	900	1100	1300	1500
16	900	1100	1300	1500

*Dark line represents equilibrium point.

**Dark line represents point at which population reaches 95% capacity.

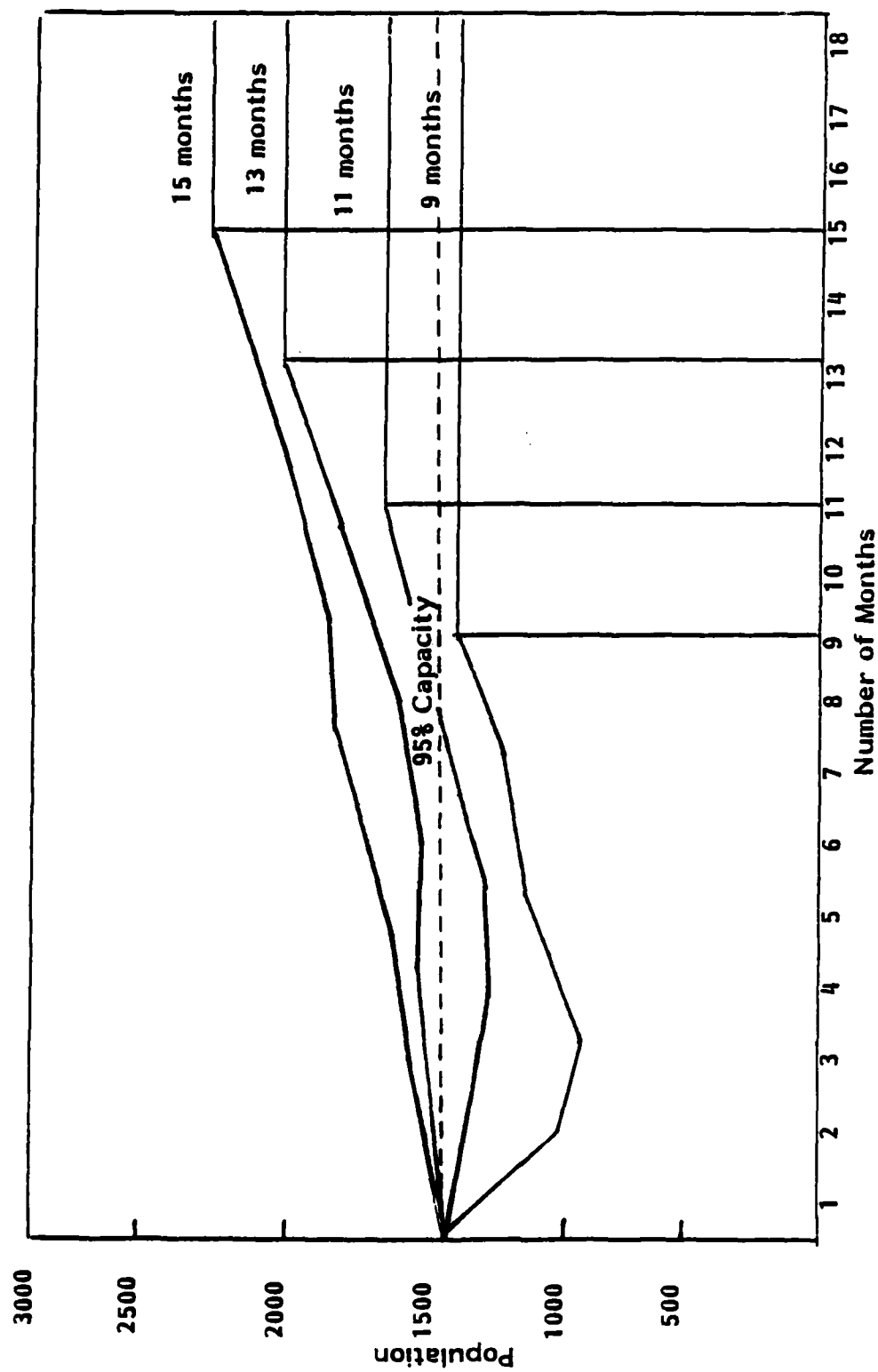


Figure 10

Population Dynamics: Admissions of 150 Per Month Over Time Served

Table 12

Results of Policy Simulation:
Admissions at 150 Per Month

Month	Time Served			
	9	11	13	15
1	1200	1346	1426	1426
2	952	1308	1427	1472
3	932	1289	1453	1532
4	991	1252	1498	1601
5	1074	1232	1513	1648
6	1126	1291	1513	1706
7	1188	1374	1532	1762
8	1276	1426	1591	1813
9	1350	1488	1674	1832
10	1350	1576	1726	1891
11	1350	1650	1788	1976
12	1350	1650	1876	2026
13	1350	1650	1950	2088
14	1350	1650	1950	2176
15	1350	1650	1950	2250
16	1350	1650	1950	2250

*Dark line represents equilibrium point.

**Dark line represents point at which population reaches 95% capacity.

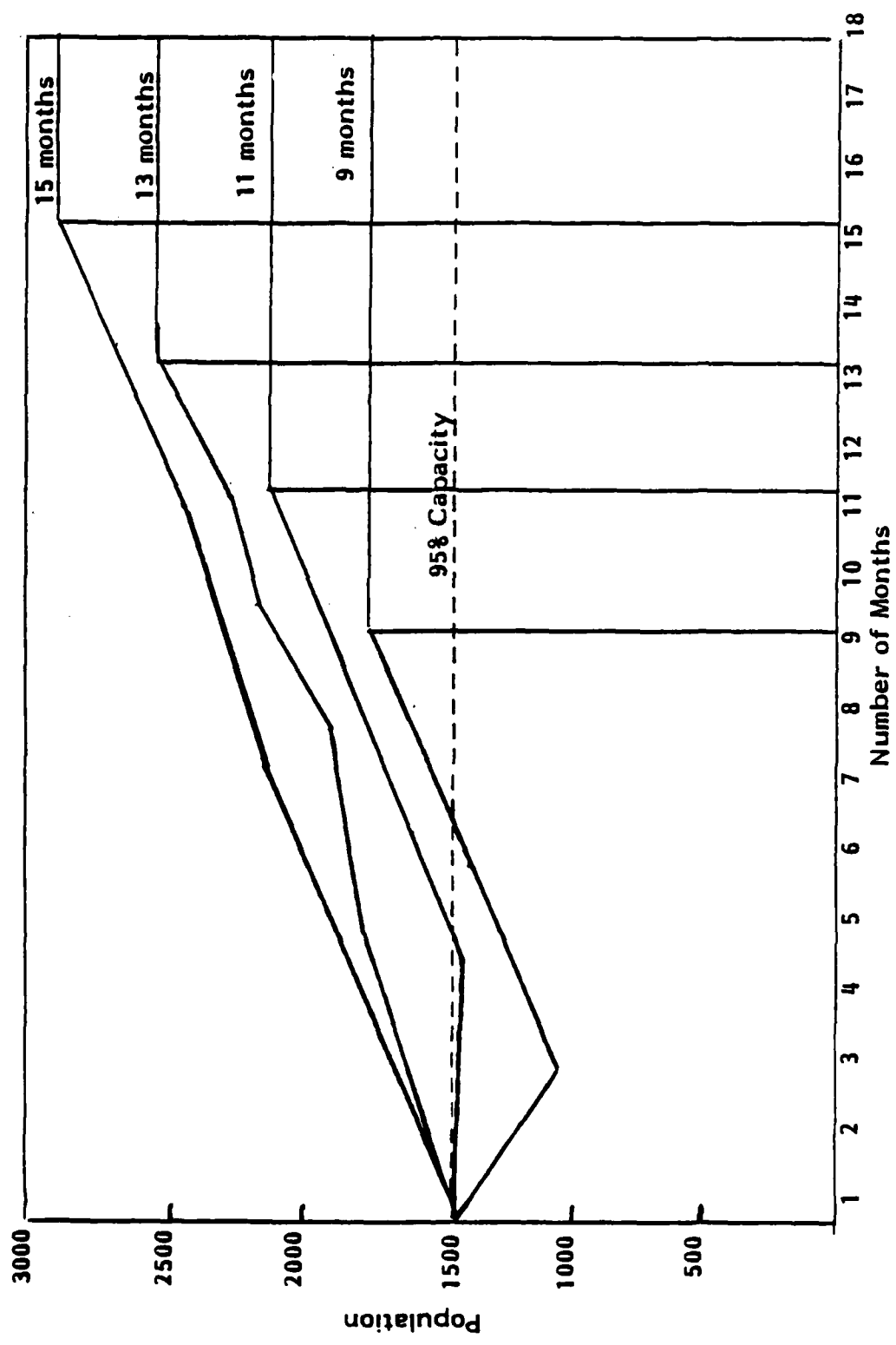


Figure 11
Population Dynamics: Admissions of 200 Per Month Over Time Served

Table 13

Results of Policy Simulation:
Admissions at 200 Per Month

Month	Time Served			
	9	11	13	15
1	1250	1396	1476	1476
2	1052	1408	1527	1572
3	1082	1439	1603	1682
4	1191	1452	1698	1801
5	1324	1482	1763	1898
6	1426	1591	1813	2006
7	1538	1727	1882	2112
8	1676	1826	1991	2213
9	1800	1938	2124	2282
10	1800	2076	2226	2391
11	1800	2200	2338	2524
12	1800	2200	2476	2626
13	1800	2200	2600	2738
14	1800	2200	2600	2876
15	1800	2200	2600	3000
16	1800	2200	2600	3000

**

*

*Dark line represents equilibrium point.

**Dark line represents point at which population reaches 95% capacity.

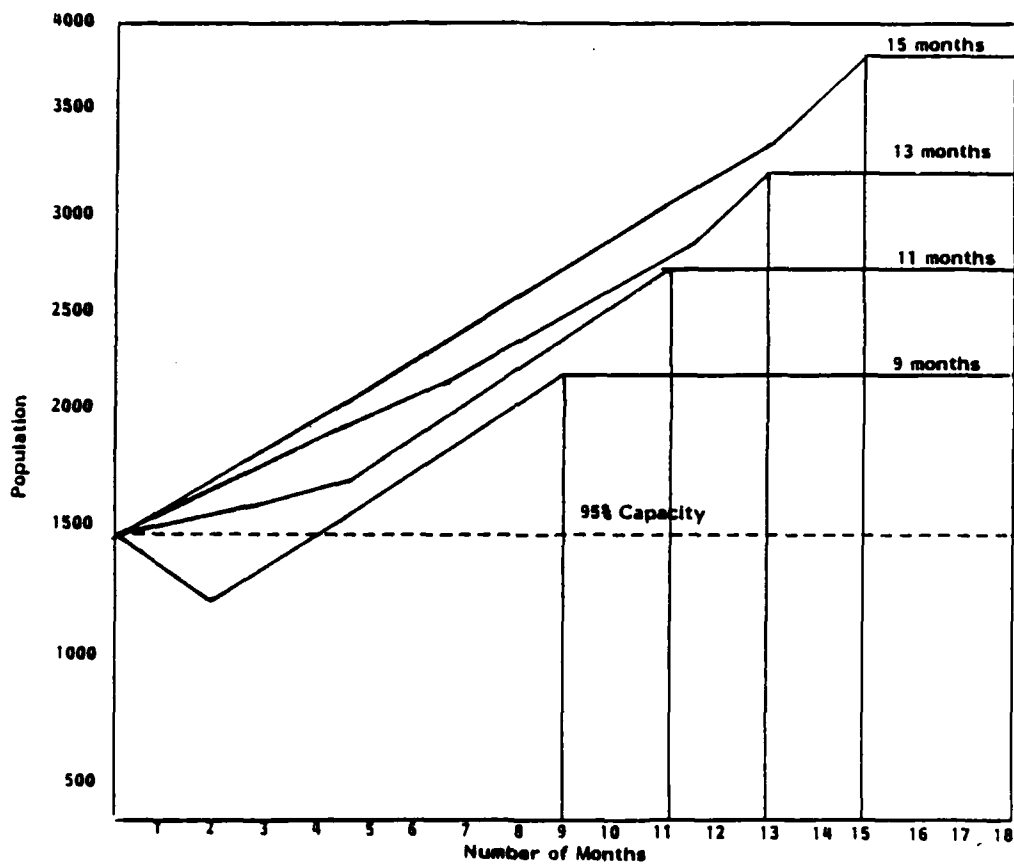


Figure 12

Population Dynamics: Admissions of 250 Per Month Over Time Period

Table 14
Results of Policy Simulation:
Admissions at 250 Per Month

Month	Time Served			
	9	11	13	15
1	1300	1446	1526	1526
2	1132	1508	1627	1672
3	1232	1589	1753	1832
4	1391	1652	1898	2001
5	1574	1732	2013	2148
6	1726	1891	2113	2306
7	1888	2074	2232	2462
8	2076	2226	2391	2613
9	2250	2388	2574	2732
10	2250	2576	2726	2891
11	2250	2750	2888	3074
12	2250	2750	3074	3226
13	2250	2750	3250	3388
14	2250	2750	3250	3576
15	2250	2750	3250	3550
16	2250	2750	3250	3750

**

*

*Dark line represents equilibrium point.

**Dark line represents point at which population reaches 95% capacity.

during periods of war time. In the event that admissions would increase so radically, even shortening the length of time served would not be successful in containing the population. This indicates that in the event of sudden increases to admissions, due to mobilization for war, for example, alternatives to the USDB as the only maximum security military prison would have to be considered since the population at equilibrium for event time served at 9 months would be higher than the USDB is able to hold.

Summary

This chapter is directed toward the population dynamics at the USDB and analyzes some of the historical trends and population components that contributed to the present situation. While it is acknowledged that the USDB shows no visible signs of strain or stress from its high rate of population, it should also be recognized that operating very close to maximum capacity leaves little margin for the unexpected contingencies.

Through use of the Cohort Time Served Matrix it has been shown that the number of admissions to the USDB is less responsible for the recent increase in population than has been the recent increases in time served. Through modification of the Cohort Time Served Matrix, a policy simulation was developed to demonstrate the consequences of various modifications of present policies governing number of admissions and length of time served. Through these policy simulations it was shown that even slight increases in aggregate time served can result in drastic increases in population.

The Army, within the context of the military justice system has a favorable opportunity to influence policy that can modify and control the USDB population. To accomplish this, policy makers must decide upon the ultimate goals and objectives of the USDB and military corrections within the sphere of military justice. After defining these goals, adjustments to the components of population can be made to meet these needs with a degree of certainty as to the overall impact that such modifications might have.

Conclusion

The high rate of population at the USDB is a relatively recent phenomenon and, like the same problem being experienced at other penal institutions throughout the country, no single cause can be identified. At the USDB, the most apparent cause for the population problem is the increasing length of time served.

Information obtained utilizing the methodology in this study should be monitored continuously by the USDB Administration, so that they may anticipate problems before they get out of control. As in this study, the cohort matrix can be easily adapted so that the effects of policy changes affecting time served or admissions can also be anticipated. Data to support the cohort matrix and the policy simulator are simple to retrieve from available inmate populations already maintained at the USDB or they can easily be calculated from the data available there. It may be useful to make this type of information as part of regular monthly reporting requirements so that relevant information is provided at all levels in the chain of command.

The standard of operating at no more than 95% capacity should be maintained, and continuous monitoring of present population data and projections similar to the simulations used in this study should be enforced.

CHAPTER IV

SUMMARY

The Correctional Environment

By its very nature, the field of corrections is peripheral to the overall mission of the Army and as a result can hardly be expected to receive the consideration or prioritization that it may be thought to merit. However, when considering the critical importance that the military places on discipline, law, and order, and on the part that corrections plays in maintaining these important qualities, it becomes apparent that the policies concerning correctional activities are far from trivial (Henshel, 1970:30-31). Irregardless of the degree of attention or priority that is given to corrections in the Army, it seems obvious that from a functional perspective at the very least, correctional policies should develop as a result of coherent, rational planning, and that the goals which corrections aim for must be explicitly set forth and agreed upon. Henshel (1970) contends that in contrast to this, the Army's correctional program appears to have developed as a result more of "... pushes and pulls from external pressures than as an internally generated product of coherent rational planning to meet certain objectives." The result of this development is what Henshel calls a "... 'hodge podge' of policy ..." similar to that of any other type of organization that has been created as a result of "... compromises between conflicting external pressures." Henshel blames the

problems within the Army Correctional Program as being a product of a diffusion of responsible individuals who for a variety of reasons, are unable to agree on the basic goals and objectives of corrections, and as a partial result corrections cannot itself become a generator of decisions in the Army.

This thesis was initiated as a result not of overwhelming problems of overcrowding or of any particular problems or crises resulting from high population rates at the USDB. Instead, it was written from a standpoint of evaluation of the direction of population changes there, and an attempt to analyze the changes to determine both their causes and eventual effects. From study of the population data, it became apparent that the population at the USDB is in excess of 95% of its maximum capacity, and that more than 190 sentenced individuals are awaiting transfer to the USDB, but cannot proceed until there is sufficient space for them. If the question were asked, "Is there a population problem at the USDB?", the answer would, for the moment be to the negative. There are apparently few problems at the USDB that can be attributed directly to overcrowding, and it is highly unlikely that, at least for the time being, riots or individual acts of violence, should they occur, would be traced to high rates of population.

On the other hand, with 190 prisoners awaiting sufficient cell space for them to transfer to the USDB, it can hardly be stated that the correctional system is operating to its optimal degree. Relating to population dynamics, the move toward the increasing length of cohort time served is an indication of a developing trend that may have distressing consequences.

Addressing the Issue

The Military Justice System

As an introduction, a general description of the Army Correctional Program was provided, along with an explanation of its role within the context of military justice. Also provided was an explanation as to the limits of military jurisdiction, which effectively determines to whom the provisions of the military justice system applies.

Historical Trends

A brief examination of the historical trends and movements and some of the factors that influenced these trends was also provided. Through this examination, focusing primarily upon the population of the past 10 years it was noted that the population of the USDB has fluctuated, somewhat independent of the total U.S. Army population, and that the trend toward operating to within 95% of the maximum capacity is a recent one. Utilization of a Cohort Time Served Matrix, a mathematical technique developed as a measure of aggregate time served, showed that only as of the last measurable months of the study, the aggregate length of time served by cohorts entering the USDB has begun a noticeable increase.

Policy Simulation

Finally, a description of the term 'population' and the components that are responsible for its dynamic nature was given. A study of the aggregate time served and monthly admissions data showed the relationship between these factors and the inmate population at the USDB, and the conclusion that deliberate choices of policy could, if necessary,

cause changes in policies that affect these components of population. From an adaptation of the cohort time served matrix, a means for accurately predicting the effects that deliberate changes would have on the USDB population was developed. Matrices of 20 different scenarios involving adjustments to numbers of monthly admissions and length of time served were prepared to illustrate the effects that particular adjustments would have on the USDB population.

Findings

Analysis of the graphic representation of the 20 policy simulation matrices demonstrated the great effect that even minor adjustment to number of new admissions or the length of time served may have on the total population of the USDB. For example, with the present cohort time served length of nearly 13 months (12.96), the policy simulation model indicated that if the monthly admissions increased to 150 per month, after 13 months the USDB population would be 1950 or, in all likelihood the maximum capacity of 1503 inmates would be incarcerated at the USDB, while 447 sentenced prisoners would be waiting for available space there.

Policy Control

Based upon centralization of authority and unity of command, the military justice organization has a greater potential to function as a system, moreso than nonmilitary criminal justice systems which many times function more as nonsystems of segmented areas of self interest. Within the military bureaucracy it should be possible to identify the objectives and goals of the military justice system in general, and of military

corrections in particular. After these goals are articulated, conscious policies should be formulated and implemented that could best accomplish the identified goals. Military corrections, particularly at the USDB, the only maximum security facility within the Army, would almost certainly benefit from more positive control measures over population dynamics.

Implementing policies identified in the simulation models is relatively easy. At the most basic level, establishment of a certain maximum admission level can be implemented, which can be adjusted to sustain the population at a certain optimum number. For example, knowing that the aggregate time served is now 12.96, by using the policy simulation model it can be determined that by limiting monthly admissions to the USDB to 100, it can be determined that after 13 months the population would be sustained at the level of 1300 until subsequent changes were made to admissions over length of time served.

Alternatives

The USDB has a distinct advantage among other maximum security penal institutions which effectively insulates it from the imminent or current overcrowding conditions of other, nonmilitary institutions. Within the Army Corrections Program are built in many "safety valves" that can be used any time the pressures of overcrowding begin to develop. Prisoners may be sent to the Army Correctional Agency at Fort Riley in lieu of or as a supplement to their prison sentence. Prisoners (as they are now in some cases) may spend part or all of their sentences at local facilities if the USDB remains overcrowded. For the most part, the Federal Prison System can take USDB prisoners if

necessary and periodically, consideration is given to construction that could renovate or completely replace the USDB (USDB Master Plan, 1978). Additionally, plans are underway to increase the maximum capacity by more than 200 within the next several years (McCotter, Note 1). For these and other reasons and legitimately so, problems relating to overcrowding appear to lack a sense of urgency.

Policy makers should not allow this well-deserved feeling of security degenerate into an attitude of complacency however. Trends identified in this study indicate that the population at the USDB is increasing, and will likely continue to do so. At some point in the future it is likely that policy makers will take note of the situation, realizing that the system is not functioning as well as it could. If such a realization comes to pass, information in this study can aid somewhat in formulating the proper measures to put the system under better control. The Army has the potential of approaching any developing population problems in a positive and effective manner, but requires first a commitment to determining the goals of the correctional system, then implementing the necessary policies to achieve them.

Recommendations

The military justice system, particularly the corrections element, should not fail to take advantage of a situation in which it has become possible to thoroughly analyze the causes of past rises in population rates and accurately predict the results on the population of future policy changes affecting admissions and time served.

Using the model developed in this thesis it is possible to determine trends that may be evolving which if allowed to continue unabated, could result in more significant population increases. In this manner it would be possible for policy makers to approach a developing population problem in an active role, as opposed to simply accepting increasing population passively.

To implement this approach, it is suggested that the cohort matrix as described in this study be adapted for use at the USDB. Using end of month population data, information readily available at the USDB, such a matrix would make it possible to determine the rate of time served, and from that information, population could be accurately predicted for months into the future, assuming continuing rates of time served remain constant.

Additionally, if admission rates are expected to rise or fall, any hypothetical number can be substituted into the matrix to determine the population that would result from any expected change in the admission rates.

It is recommended that information obtained from the cohort time served matrix be incorporated into regular end of month population reports, that this information be provided, and the relevancy of it be explained to all concerned persons upwards in the chain of command.

Regarding population control at the USDB, it is recommended that every effort should be made to contain the population to no more than 95% capacity. For the sake of program effectiveness, contingency planning, safety, and security, the 95% capacity rate should not be exceeded.

One means of controlling the population would be adoption of limits obtained by calculating a policy simulation model. For example, by the use of the policy model in this study, it was determined that by limiting admissions to 100 per month, and controlling time served to 13 months, population would reach equilibrium at 1300 inmates on the 13th month. With advance knowledge of population stability, budgetary, training, logistical and program stabilities would also stabilize and improve.

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HD-A132 096

INMATE POPULATION DYNAMICS AT THE UNITED STATES
DISCIPLINARY BARRACKS(U) ARMY MILITARY PERSONNEL CENTER
ALEXANDRIA VA T E LOHMAN 04 AUG 83

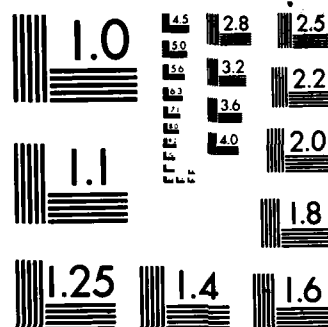
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

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APPENDICES

APPENDIX A

Raw Data

APPENDIX A

Table A
Monthly Admissions

Month/Admissions		Month/Admissions		Month/Admissions		Month/Admissions	
1 -	64	33 -	149	64 -	60	95 -	181
2 -	96	34 -	189	65 -	64	96 -	176
3 -	66	35 -	201	66 -	105	97 -	189
4 -	84	36 -	148	67 -	77	98 -	159
5 -	102	37 -	179	68 -	101	99 -	142
6 -	141	38 -	135	69 -	110	100 -	225
7 -	102	39 -	170	70 -	108	101 -	167
8 -	134	40 -	150	71 -	85	102 -	168
9 -	171	41 -	163	72 -	95	103 -	166
10 -	150	42 -	154	73 -	75	104 -	147
11 -	224	43 -	159	74 -	87	105 -	154
12 -	176	44 -	162	75 -	114	106 -	197
13 -	163	45 -	158	76 -	72	107 -	139
14 -	206	46 -	107	77 -	117	108 -	193
15 -	160	47 -	137	78 -	77	109 -	146
16 -	124	48 -	143	79 -	69	110 -	161
17 -	161	49 -	130	80 -	128	111 -	152
18 -	158	50 -	87	81 -	170	112 -	182
19 -	159	51 -	112	82 -	144	113 -	169
20 -	224	52 -	120	83 -	165	114 -	149
21 -	249	53 -	91	84 -	153	115 -	124
22 -	249	54 -	96	85 -	122	116 -	105
23 -	321	55 -	120	86 -	173	117 -	135
24 -	326	56 -	104	87 -	125	118 -	150
25 -	235	57 -	122	88 -	157	119 -	131
26 -	168	58 -	138	89 -	151	120 -	91
27 -	230	59 -	99	90 -	147	121 -	67
28 -	210	60 -	119	91 -	160	122 -	98
29 -	173	61 -	179	92 -	178	123 -	88
30 -	166	62 -	81	93 -	182	124 -	62
31 -	145	63 -	109	94 -	194	125 -	76
32 -	157						

Table B
Monthly Releases

Month/Releases		Month/Releases		Month/Releases		Month/Releases	
1 -	104	33 -	146	64 -	107	95 -	179
2 -	111	34 -	141	65 -	132	96 -	187
3 -	93	35 -	174	66 -	152	97 -	155
4 -	95	36 -	147	67 -	85	98 -	195
5 -	107	37 -	140	68 -	86	99 -	152
6 -	137	38 -	151	69 -	120	100 -	165
7 -	67	39 -	130	70 -	79	101 -	184
8 -	107	40 -	152	71 -	81	102 -	181
9 -	126	41 -	155	72 -	132	103 -	150
10 -	118	42 -	190	73 -	81	104 -	180
11 -	108	43 -	125	74 -	76	105 -	143
12 -	130	44 -	163	75 -	87	106 -	148
13 -	160	45 -	149	76 -	110	107 -	135
14 -	196	46 -	173	77 -	71	108 -	156
15 -	138	47 -	135	78 -	116	109 -	157
16 -	174	48 -	138	79 -	82	110 -	160
17 -	210	49 -	135	80 -	83	111 -	131
18 -	269	50 -	123	81 -	95	112 -	206
19 -	112	51 -	137	82 -	101	113 -	141
20 -	149	52 -	106	83 -	105	114 -	170
21 -	200	53 -	129	84 -	108	115 -	177
22 -	206	54 -	158	85 -	122	116 -	88
23 -	247	55 -	89	86 -	142	117 -	118
24 -	198	56 -	110	87 -	90	118 -	141
25 -	248	57 -	122	88 -	121	119 -	154
26 -	267	58 -	108	89 -	139	120 -	123
27 -	319	59 -	94	90 -	155	121 -	63
28 -	173	60 -	147	91 -	276	122 -	89
29 -	193	61 -	134	92 -	146	123 -	65
30 -	244	62 -	123	93 -	153	124 -	71
31 -	125	63 -	124	94 -	136	125 -	74
32 -	149						

Table C
Monthly Admissions to Release Ratio

Number / Ratio	Number / Ratio	Number / Ratio	Number / Ratio
1 - .61	33 - 1.02	64 - .84	95 - 1.01
2 - .86	34 - 1.34	65 - .48	96 - .94
3 - .70	35 - 1.15	66 - .69	97 - 1.21
4 - .88	36 - 1.00	67 - .90	98 - .81
5 - .95	37 - 1.27	68 - 1.17	99 - .93
6 - 1.02	38 - .89	69 - .91	100 - 1.36
7 - 1.52	39 - 1.30	70 - 1.36	101 - .90
8 - 1.25	40 - .98	71 - 1.04	102 - .92
9 - 1.35	41 - 1.05	72 - .71	103 - 1.10
10 - 1.27	42 - .81	73 - .92	104 - .81
11 - 2.07	43 - 1.27	74 - 1.14	105 - 1.07
12 - 1.35	44 - .99	75 - 1.31	106 - 1.33
13 - 1.01	45 - 1.06	76 - .65	107 - 1.02
14 - 1.05	46 - .61	77 - 1.64	108 - 1.23
15 - 1.15	47 - 1.01	78 - .66	109 - .99
16 - .71	48 - 1.03	79 - .84	110 - 1.00
17 - .76	49 - .96	80 - 1.54	111 - 1.16
18 - .58	50 - .70	81 - 1.78	112 - .88
19 - 1.41	51 - .81	82 - 1.42	113 - 1.19
20 - 1.50	52 - 1.13	83 - 1.57	114 - .87
21 - 1.24	53 - .70	84 - 1.41	115 - .70
22 - 1.55	54 - .60	85 - 1.00	116 - 1.19
23 - 1.31	55 - 1.34	86 - 1.21	117 - 1.14
24 - 1.18	56 - .94	87 - 1.38	118 - 1.06
25 - .67	57 - 1.00	88 - 1.29	119 - .85
26 - .86	58 - 1.27	89 - 1.08	120 - .73
27 - .65	59 - 1.05	90 - .94	121 - 1.06
28 - 1.00	60 - .80	91 - .57	122 - 1.10
29 - .86	61 - .58	92 - 1.21	123 - 1.35
30 - .59	62 - .65	93 - 1.18	124 - .87
31 - 1.25	63 - .87	94 - 1.42	125 - 1.02
32 - 1.04			

Table D
Monthly Admissions: Percent of Population

Number/Percent		Number/Percent		Number/Percent		Number/Percent	
1 -	6.33	33 -	12.24	64 -	12.98	95 -	12.08
2 -	9.57	34 -	15.00	65 -	16.87	96 -	11.77
3 -	6.88	35 -	15.22	66 -	21.90	97 -	12.62
4 -	8.85	36 -	11.43	67 -	11.90	98 -	10.59
5 -	10.66	37 -	13.49	68 -	12.19	99 -	9.80
6 -	14.24	38 -	10.21	69 -	17.49	100 -	14.79
7 -	10.68	39 -	12.68	70 -	11.01	101 -	10.96
8 -	13.11	40 -	11.02	71 -	10.88	102 -	11.14
9 -	15.74	41 -	11.88	72 -	16.56	103 -	11.12
10 -	13.51	42 -	11.24	73 -	11.39	104 -	9.87
11 -	18.42	43 -	11.87	74 -	10.70	105 -	10.52
12 -	13.70	44 -	11.77	75 -	12.25	106 -	12.98
13 -	12.37	45 -	14.00	76 -	15.40	107 -	9.21
14 -	15.11	46 -	16.49	77 -	9.93	108 -	12.32
15 -	12.05	47 -	13.22	78 -	16.20	109 -	9.96
16 -	9.44	48 -	13.52	79 -	11.53	110 -	10.25
17 -	12.38	49 -	13.13	80 -	11.90	111 -	9.73
18 -	12.66	50 -	11.88	81 -	13.01	112 -	11.28
19 -	13.97	51 -	13.90	82 -	12.64	113 -	10.72
20 -	17.92	52 -	10.69	83 -	12.52	114 -	9.40
21 -	18.44	53 -	13.13	84 -	12.06	115 -	7.75
22 -	21.80	54 -	17.26	85 -	13.17	116 -	6.88
23 -	20.49	55 -	9.65	86 -	15.67	117 -	8.58
24 -	14.88	56 -	11.80	87 -	9.10	118 -	9.34
25 -	10.84	57 -	13.34	88 -	12.18	119 -	8.21
26 -	15.02	58 -	11.63	89 -	13.74	120 -	5.93
27 -	14.24	59 -	9.67	90 -	15.39	121 -	4.53
28 -	13.00	60 -	15.90	91 -	26.58	122 -	6.48
29 -	12.56	61 -	14.74	92 -	13.87	123 -	5.78
30 -	11.44	62 -	14.21	93 -	12.88	124 -	4.11
31 -	13.23	63 -	15.08	94 -	13.35	125 -	5.02
32 -	12.81						

Table E
Monthly Releases: Percent of Population

Number / Percent	Number / Percent	Number / Percent	Number / Percent	Number / Percent
1 - 12.33	33 - 15.83	64 - 8.81	95 - 15.72	
2 - 13.94	34 - 15.16	65 - 6.54	96 - 5.51	
3 - 11.63	35 - 18.41	66 - 11.04	97 - 13.44	
4 - 12.33	36 - 14.71	67 - 8.79	98 - 17.00	
5 - 14.32	37 - 13.90	68 - 11.32	99 - 13.17	
6 - 19.24	38 - 14.58	69 - 12.00	100 - 14.58	
7 - 8.52	39 - 12.50	70 - 11.94	101 - 15.69	
8 - 13.70	40 - 14.36	71 - 9.34	102 - 15.63	
9 - 15.96	41 - 14.71	72 - 9.27	103 - 12.75	
10 - 14.01	42 - 18.51	73 - 8.65	104 - 15.49	
11 - 12.21	43 - 11.84	74 - 9.96	105 - 12.26	
12 - 13.29	44 - 15.50	75 - 12.51	106 - 12.62	
13 - 16.09	45 - 11.52	76 - 8.03	107 - 10.94	
14 - 20.39	46 - 8.05	77 - 12.95	108 - 12.81	
15 - 13.41	47 - 10.59	78 - 8.47	109 - 12.52	
16 - 17.14	48 - 10.99	79 - 8.00	110 - 12.81	
17 - 22.60	49 - 10.05	80 - 14.09	111 - 10.24	
18 - 32.76	50 - 6.98	81 - 17.08	112 - 16.81	
19 - 12.91	51 - 9.07	82 - 13.79	113 - 11.13	
20 - 16.98	52 - 9.86	83 - 14.89	114 - 13.43	
21 - 22.19	53 - 7.57	84 - 13.23	115 - 13.64	
22 - 21.79	54 - 8.21	85 - 10.42	116 - 6.60	
23 - 24.26	55 - 10.61	86 - 14.16	117 - 8.93	
24 - 17.27	56 - 9.07	87 - 10.38	118 - 10.73	
25 - 21.88	57 - 10.53	88 - 12.35	119 - 11.75	
26 - 25.82	58 - 11.75	89 - 11.60	120 - 9.33	
27 - 33.75	59 - 8.49	90 - 11.22	121 - 4.68	
28 - 17.58	60 - 10.00	91 - 10.85	122 - 6.72	
29 - 20.06	61 - 7.04	92 - 12.93	123 - 4.75	
30 - 27.79	62 - 7.57	93 - 14.20	124 - 5.16	
31 - 13.82	63 - 10.33	94 - 12.11	125 - 5.43	
32 - 16.33				

APPENDIX B

**Proceedings of the National Workshop
on Prison Population Forecasting**

APPENDIX B

**from PROCEEDINGS OF THE NATIONAL WORKSHOP ON
PRISON POPULATION FORECASTING
January 13-15, 1983:113-116**

Calculating the Aggregate Length of Stay

Probably the best way to understand the Colorado approach to calculating aggregate length of stay is by way of analogy. Assume one had a checking account and knew both the amount of monthly deposits and the monthly balance, but was ignorant of withdrawals. A simple matrix could be constructed showing the monthly deposits and balances as indicated in the attached example. A reasonable estimate of the monthly withdrawals could be calculated by a method of back substitution.

For example, suppose that \$240 was deposited in January and the balance for January was \$942. Similarly, \$235 was deposited in February and the February balance was \$950. Extending these deposits through the matrix, it will be noticed that by May the monthly balance was \$1,120. Adding together the deposits for January through May yields a balance of \$1,250. Subtracting the actual balance of \$1,120 from the projected balance of \$1,250 indicates a surplus of \$130, which is an estimate of the amount withdrawn.

Similarly, it will be noticed that the actual balance in June was \$1,160. The total of all deposits between January and June equals \$1,520. Subtracting the actual balance of \$1,160 from the projected

balance of \$1,520 results in a surplus of \$360, or the estimated amount of withdrawals.

Another question that might be asked of this matrix is the aggregate amount of time that deposits stay in the account. For example, in January, \$240 was deposited. About how long does this deposit remain in the account? As can be seen from the matrix, the \$240 remains in the account from January to April and only \$110 of the original deposit could remain in the account for the month of May; otherwise, the account would be out of balance by \$130.

To calculate how long the \$240 remained in the account, simply add the number of days in January through April, which is equal to 120 days. As only \$110 of the original \$240 remains in the account during May, we need to add a fractional part of the month of May to 120 days:

$$\text{Aggregate Time} = (120 \text{ days}) + \frac{(\$110) (31 \text{ days of May})}{(\$240)}$$

$$\text{Aggregate Time} = 134.21 \text{ days}$$

We conclude, therefore, that the January deposit of \$240 remained in the account a total of 134.21 days.

Similarly, the \$235 deposited in February remained in the account February to May, and \$115 remained in the account during June. The calculation of the number of days that the \$235 remained in the account would be as follows:

$$\text{Aggregate time} (120) + \frac{(\$115) (30 \text{ days})}{(\$235)} = 134.68 \text{ days}$$

If this procedure is continued, it will be noticed that the aggregate time in the account for deposits made in March is 133.33 days; for April, 130.68 days, and so forth.

Essentially the Colorado approach to calculating aggregate length of stay is analogous to the banking situation discussed above. Using the quarterly commitments for "deposits" and the quarterly prison population for the "balance," the Colorado model uses a back substitution method to calculate the aggregate length of stay of each commitment cohort coming into the prison.

Matrix Example

Month	Deposits	Aggregate Time (1)	Jan (31)*	Feb (28)	Mar (31)	Apr (30)	May (31)	June (30)	July (31)	Aug (31)	Sept (30)	Oct (31)	Nov (30)	Dec (31)
Jan	240	134.21	240	240	240	240	(110)							
Feb	235	134.68		235	235	235	235	(115)						
Mar	260	133.33			260	260	260	260	(95)					
Apr	250	130.68				250	250	250	250	(70)				
May	265	128.77					265	265	265	265	(51)			
June	270	124.64						270	270	270	270	(23)		
July	290	123.83							290	290	290	290	(8)	
Aug	310	122.80								310	310	310	310	(8)
Sept	315										315	315	315	315
Oct	312											312	312	312
Nov	320												320	320
Dec	325													325
Balance			942	950	990	1050	1120	1160	1170	1205	1236	1250	1265	1280

(1) Aggregate Time

* Number of days in the month

VITA

VITA

Captain Thomas E. Lohman is a native of Aviston, Illinois, received his Bachelor of Science Degree from Southern Illinois University in 1970, and entered the United States Army in 1971. He received his commission through Officer Candidate School and has performed duties as a Military Police Investigator, Military Police Investigator Supervisor, Platoon Leader, Executive Officer and Commander of the 152th Military Police Company, Fort Huachuca, Arizona. His last assignment was as a Criminal Investigation District Executive Officer at Stuttgart, Germany. Captain Lohman is a graduate of Military Police Officer Advanced Course and Advanced Investigation Management School at Fort McClellan, Alabama. Captain Lohman is married and has two sons, Chad and Jeremy.

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