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THE HIGH TECH HOODS
& A-CORP PRESENTS...

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*****
*%      THE ULTIMATE      %*
*% CELLULAR PHONE PHREAKS %*
*%      MANUAL PART 2    %*
*%                               %*
*%      WRITTEN BY THE RAVEN %*
*%      AND INTROSPECT    %*
*****
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THE RAVEN

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THANKS TO THE FOLLOWING: PEBBLES, BIT STREAM & THOMAS ICOM

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INDEX:

- I. WHAT'S IN A NAM
- II. NAM/ESN REPROGRAMMING
- III. ADVANCED REPROGRAMMING
- IV. OBTAINING SYS. REGISTRATION DATA
- V. REPROGRAMMING YOUR PHONE
- VI. -----

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I. What's In A NAM

First thing were going to start with is the NAM. The NAM is a PROM, A blank NAM costs about \$5. Sometimes its more expensive depending on the operating temperature and packaging specifications.

Two flavors of NAM's are most commonly used for cellular phones. NEC Corp. uses the open collector (SIGNETICS p/n 82S23 or equivalent). All others use the tri-state (SIGNETICS 82S123 or equivalent). Blank NAMs are manufactured by Signetics, National Semiconductor, Monolithic Memorys, Fujitsu, Texas Instruments, and Advanced Microdevices. Blank NAMs can be purchased at your local electronic distributor's, thru the various parts sources advertised in electronic magazines, and some radios come with a blank included.

The NAM contains the subscriber number and lock code, the home system ID and other system-required data. You may wonder how this info is arranged. The NAM is organized into 32 rows and 8 columns. It is 32 words of 8 bits each. (256 bits total). Starting from top of the NAM (address 00), you will find the abbreviation SIDH. This means "System Identification Number Home", a number

CPP2.TXT

starting at 0001 assigned by the FCC. Each market allows two systems. These two digits are even for the wire-line and odd for the non-wireline.

At address 03, we find LU (Local Use) on the left and MIN on the right, and they are usually set to 1. Locations with zeros are reserved. Going down the map, there's MIN1 and MIN2-the subscriber number and the area code respectively. Don't try to read them from a raw printout of the NAM data, as they are scrambled beyond recognition. The reason? The way they are arranged is the way they must be transmitted to the cellular systems receivers. The programmer does this to make the radio's job easier.

Next is the station class mark, which identifies the class and power capability of the phone. The system will treat a handheld (low power) differently than a standard 3-watt mobile.

IPCH is the Initial Paging Channel. The radio listens for a page on this channel. Wirelines use 334 and non-wirelines use 333.

ACCOLC (ACCESS Overload Class) is designed for throwing off customers in the event of an overload. Through neglect, this standard has been largely unused. (A Class 15 station is supposed to be police, fire or military). Usually, it's set to 0 plus the last digit of the phone number to provide random loading.

PS (Preferred System). This is always 1 in a non-wireline and 0 in wireline.

The Lock Code is about the only thing you can read directly by studying NAM data. The "spare" bit must be a 0 if the radio contains a 3-digit code. Because the number of clicks when you dial 0 on a (dial) phone equals 10, zeros in the lock code are represented by an "A" (the hexadecimal equiv of 10).

EE, REP, HA and HF correspond to end-to-end signaling (DTMF tones, possibly as you talk), and REPeratory dialing (provision for 10 or more numbers in memory).

Horn Alert and Hands Free. Like all options, they are 1 if turned on and 0 if turned off (all these numbers are in hex). They are supposed to be used by radio makers to store option switches. Usually 13 is used, 14 sometimes and the rest less often.

Last, you will find Checksum Adjustment and Checksum. These numbers are calculated automatically after the data has been edited for the NAM. The sum of all words in the NAM plus these last two must equal a number with 0's in the last two digits. The radio checks this sum and if it isn't correct the radio assumes the NAM is bad or tampered with. In the case the radio refuses to operate until a legal NAM is installed.

THE ANATOMY OF A NAM

MARK Defin. most <-- BIT Significance --> least Hex

CPP2.TXT

	0	SIDH (14-8)	00
		SIDH (7-0)	01
LU=Local use LU	000000	MIN	02
	00	MIN2 (33-28)	03
		MIN2 (27-24) 0000	04
	0000	MIN1 (23-20)	05
		MIN1 (19-12)	06
		MIN1 (11-4)	07
		MIN1 (3-0) 0000	08
	0000	SCM (3-0)	09
	00000	IPCH (10-8)	0A
		IPCH (7-0)	0B
	0000	ACCOLC (3-0)	0C
PS=Perf Syst	0000000	PS	0D
	0000	GIM (3-0)	0E
	LOCK DIGIT 1	LOCK DIGIT 2	0F
	LOCK DIGIT 3	LOCK SPARE BITS	10
EE=End/End	EE	000000 REP	11
REP=Reprity	HA	000000 HF	12
HF=Handsfree		Spare Locations (13-1D)	13
HA=Horn Alt		contain all 0's	1D
		NAM CHECKSUM ADJUST.	1E
		NAM CHECKSUM	1F

II. NAM/ESN REPROGRAMMING

The first step to using cellular phones is to obtain one. They can be purchased new or used. Ham fests are one good source. Many people dump their cellular phones once they see just how expensive they are to operate. And of course the perception of being jerked promotes phreaking.

First generation E.F. Johnson units are good choice as they are easy to modify, use uniquely effective diveristy (dual antenna) receivers, and use the AMPS control bus, which means that several maker's control heads will work with it. Another good choice is Novatel's Aurora/150. It uses a proprietary parallel bus and control head, but costs less, is rugged, and is also easy to work on. Also, all Novatel CMTs have built-in diagnostics. This allows you to manually scan all 666 repeater output freqs-great for scanning!

All cellular phones have a unique ESN. This is a 4-byte hex or 11 digit octal number stored in the ROM soldered on the logic board. Ideally, it's supposed to be never changed. Some newer cellulars embed the ESN in a VLSI IC (Very Large Scale Integration Integrated Circuit) along with the units program code. This makes ESN mods very difficult at best. The ESN is also imprinted on the reciever boiler plate, usually mounted on the outside of the housing. When converted to octal (11 digits), the first 3 digits represents the maker while the other 8 identify the unit.

The other important ROM is the NAM. It contains the MIN (i.e. phone #,

including area code), the lock code, and various model ID and carrier ID codes.

The lock code keeps unauthorized parties from using the phone. Some newer cellualars have no built in NAM and instead use an EEPROM, which allows a technician who knows the maintenance code to quickly change the NAM data thru the control head keypad.

WHen one attempts to make a cellular call, the transceiver first automatically transmits the ESN and NAM data to the nearest cellsite reapter by means of the Overhead Data Stream (ODS). The ODS is a 10 kilobaud data channel that links the cellular's computer to the MTSO, which then controls the phone's entire operation down to the selected channel and output power. If the MTSO doesn't recognize the received ESN/MIN pair as valid (sometimes due to RF noise), it issues a repeat order and will not process the call unit until a valid pair is received.

In most cities, there are two CPCs or "carries". One is the wireline CPC and the other is the non-wireline CPC. Both maintain their own MTSO and network (i.e: cell-site repeaters), and occupy separate halves of the cellular radio band. Non-wirelines use System A, and wirelines use System B. (the amenities that are avaible with most landline phone service - call waiting, caller ID, call-forwarding, 3-way calling,etc., are standard fair for most CPCs. However, they are usually applied for differently.)

For the cellular phreaker, the most diffucult task is obtaining usable ESN/MIN pairs. Over the years,standard phreaker techniques have been employed for all types of phreaking to obtain the required info. These includes trashing, using inside help,joining the staff,hacking them from known good ESNs and MINs (i.e: spoofing), con strategis, strong-arming, Bribing, blackmail, etc. (This is how The High Tech Hoods get them!).

The hacker knows that most CPCs do not turn off or keep track of unused MIN numbers. In fact, their general pattern is to start at the low numbers and work their way up. WHen a number is cancelled, it is reassigned instead of using a larger number.

The first places to look is the authorized cellular installers and service centers in your area (see your Yellow Pages). They have on file a record of every cellular phone installed or serviced by them, including the ESN/MIN pairs. Another place to focus on is the cellular CPC's customer service or billing department. These offices contain the ESN/MIN pairs often for thousands of cellular phones, and hire low-paid people. Some cellular CPCs, installers and service centers will provide NAM system parameters upon request, and some will sell you NAM and ESN memory maps and schematics of a specific cellular phone model. And some will sell you service manuals (i.e: Motorola) that will describe the often easy method to program their cellular phones.

The good phreak/hacker could interface the cellular phone's ADC circuit to his PC and hack out all of the valid ESN/MIN pairs he could possibly need. Since the ESN/MIN pair are transmitted from cellular phones (usually in an unencrypted form), these pairs can be obtained simply by scanning the cellular phone channels. Even if they are encrypted, the phreaker only will need to reproduce the encrypted pair. In some areas, you can buy the ROMs right off

the street - often by the same dealers who sell drugs and stolen property, etc. All it takes is a few discreet inquiries. However, many get caught doing this because of police stings.

Once a valid ESN/MIN is obtained, it must be programmed into the cellular phone's ROM. Some cellular makers use different devices and memory maps, but the standard is the AMPS 16-pin 32x8 bit format and some ROMs have proprietary markings.

If the part number are different than those given and you can't find them in your data book, look for the IC maker's logo and call or write them for data sheets. If the IC's have proprietary markings, by looking at the external parts that are directly wired to them, one can often determine not only whether the IC is open-collector or tri-state, but also what the pin assignments are, and sometimes the type of replacement IC to use.

The ESN ROM is then carefully desoldered from the logic board (first ground the soldering tip thru a 1 Meg-ohm resistor). Once, removed the IC can then be placed on a ROM reader/programmer or NAM programmer (bit editing mode). Any ROM reader/programmer that will burn a compatible ROM is usable, but a dedicated NAM programmer has built-in software that takes out much of the aggravation. Using a non-NAM ROM reader/programmer, one searches for the memory locations that has the same number as ESN printed on the boiler plate. This number will be immediately followed by an 8-bit checksum determined by the 8 least significant bits of the hex sum of the ESNs four bytes.

The old ESN data (now copied into the NAM programmer's RAM) is replaced by the new ESN and the updated checksum. A new blank and compatible ROM is inserted into the ROM burner and burned with the new ESN data. Most cellular phreakers at this point install a Zero Insertion Force (ZIF) DIP socket into the logic board for this and any future ROM changes.

The NAM IC is usually already installed in a ZIF socket on the logic board. Similarly, its MIN is read by the ROM reader/programmer and a new ROM is burned with the new MIN and updated MIN checksum. Altho one may wish to also update the CPC's system parameters, they can left the same if the same CPC is desired. To change the CPC's designation, the last four MIN digits, the checksum and the exchange (if they use more than one exchange) are changed.

The more astute cellular phreaker of course can design and build his own NAM programmer/reader, ideally one interfaced to a PC. A more primitive approach is to interface two banks of hexthumbwheel switches to the sockets, altho a computer program would be very helpful to determine the proper switch settings. Thumbwheel switches allow you to make changes on the fly and they can be plugged in as needed, so if one is caught red-handed, it is difficult to prove intent and origin of phone call.

III. ADVANCED REPROGRAMMING

Your cellular phone contains a special memory which retains data about the phone's individual characteristics, such as its assigned phone number, system identification number, (ID#) and other data that is necessary for cellular operation. This special memory is known as the NAM. You can program the phone yourself, if the phone has not already been programmed where you got it. You

can also reprogram the phone yourself should you wish to change some of the features already selected for the NAM.

The reprogramming of the NAM is performed after you have contacted your cellular system operator for the necessary data as described below. Enter the data received from your cellular system operator in the NAM Reprogramming Data Table before reprogramming the NAM of your cellular phone. Incorrect NAM entries can cause your cellular phone to operate improperly or not at all. Your cellular phone can be reprogrammed up to three times. After that, it must be reset at a Motorola-authorized service facility.

Be sure you read this complete text before attempting to reprogram your phone!

1. RE-PROGRAMMING FEATURES

You must get seven pieces of data from the cellular system operator to allow you to reprogram the cellular phone. You provide the remaining data. Write all of this programming data on the NAM Reprogramming Data Table provided in this text before implementing this procedure. Incorrect NAM entries can cause your cellular phone to operate improperly or not at all. The required data is:

- * System Identification (SID) Code (S-digits): Indicates your home system. Enter 0's into the left-most unused positions. Provided by the system operator.
- * Cellular Phone Number (10 digits): Used in the same manner as a standard land-line phone. The mobile phone number and the Electric Serial Number are checked against each other by the cellular system each time a call is placed or received. Provided to you by the system operator.
- * Station Class Code (2 digits): This number is 06 or 14 for most personal or portable phones. Even though your phone has extended bandwidth capability (832 channel capacity), the cellular system operator may require your station class code to remain 06. The code should be 14 if 832 channel operation is allowed.
- * Access Overload Class (2 digits): Provided to you by the system operator.
- * Group ID Mark (2 digits): Provided to you by the system operator.
- * Security Code (6 digits): The six-digit security code allows the user to restrict his calls in certain ways and permits other advanced security measures. Refer to your phone's operator manual for further details. Select any 6-digit code that you will remember, but one that will not be easily guessed.
- * Unlock Code (3-digits): The 3-digit unlock code unlocks the phone after it has been locked. Locking the phone allows you to prevent unauthorized usage. With many models, this number can be reused as often as desired.

Check the users manual. Select any convenient 3-digit number.

- * Initial Paging Channel (4 digits): Use a leading 0 if required. (example: Channel 334 is entered as 0334.) Provided to you by the system operator.
- * Option Bits (6 digits): This reprogramming step allows you to program six separate features in one step. Each feature is either selected or cancelled by assigning a value of 1 or 0. The six individual single-digit features combine to form a six-digit code which is entered as one step. If any of the features is to be changed, the entire six-bit word must be re-entered.

DIGIT #1: Internal Speaker: This feature is normally selected by entering 0. However, if you purchased the convertible Accessory and it contains a separate external/VSP unit, cancel the internal speaker feature by reprogramming 1.

DIGIT #2: Local Use: This feature is normally selected by entering 1. Your system operator can tell you if you need to cancel this feature by reprogramming 0.

DIGIT #3: MIN Mark: This feature is normally not used and is assigned a value of 0. To select use 1.

DIGIT #4: Auto Recall: This feature is always 1.

DIGIT #5: 2nd Phone Number: This feature is usually not used and assigned a value of 0.

DIGIT #6: Diversity: This feature is always set at 0 for the portable/personal phone used alone. If you have a convertible accessory, and it has two external antennas, select this feature by reprogramming 1.

- * Option Bits (3 digits): This step allows you to reprogram an additional three separate features in one step. Each feature is either selected or cancelled with the digit 1 or 0. The three individual single-digit features combine to form a three-digit code which is entered as one step. If any of the features is to be changed the entire three-bit word must be reentered.

DIGIT #1: Long Tone DTMF: Certain electronic devices such as answering machines, are not able to decode the normal DTMF tones because the phone standard duration is too short. The Long Tone DTMF allows access to answer machines and other similar devices by transmitting the DTMF tone for as long as the key is depressed. This feature is normally not used and is

CPP2.TXT

assigned a value of 0. However you can select long tone DTMF by reprograming 1.

NOTE: Personal or portable models with a MENU key can more flexibly select and cancel this feature thru the menu. To allow Menu control of the function it must be cancelled in the NAM by setting this bit to 0. If Long Tone DTMF is selected in the NAM with a 1 in this bit, it cannot be reversed thru the menu.

DIGIT #2: Future use: This feature is always set at 0.

DIGIT #3: Eight-Hour Timeout (Convertible only): Personal or portable phones with the convertible accessory can normally be left active in the vehicle for eight hours with the ignition cut off. If the time out feature is selected the phone will turn itself off after eight hours to preserve the vehicle's battery. This feature is normally selected by entering 0. However, you can cancel this eight-hour time limit by entering 1.

IV. OBTAINING SYS. REGISTRATION DATA

A cellular phone owner purchases services from a cellular system operator, just as he would purchase land-line service (for standard phones) from the local phone company. In cities with cellular coverage, the customer may have the option of picking one or two possible cellular system operators.

Before you can obtain a phone number you will have to supply your cellular system operator with your electronic serial number. All cellular phones contain a special Electronic Serial Number (ESN). The ESN uniquely identifies your phone and provides a measure of protection against theft and fraud. The ESN is an eight-character (numeric/hexadecimal) number printed on the box your phone came in. Once you supply your electronic serial number to the system operator he or she will issue your phone number and supply the other data required to reprogram the NAM. You should immediately enter this data on the NAM Programming Data Table found in this text.

V. REPROGRAMMING YOUR PHONE

Determinig the initial Reprogramming Sequence:

The initial reprogramming steps include a sequence of keypresses which vary depending on the type of cellular phone you have. The phone NAM can be reprogrammed from the personal or portable keypad. Determine from the Six-Keystroke table below which of the six keystroke sequence numbers to use on your phone, based on the type of keys present on the keypad.

SIX-KEYSTROKE TABLE

CPP2.TXT

Determining the sequence Number with Personal/Portable Keypad

PERSONAL/PORTABLE KEYPAD KEYS SEQUENCE

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MENU AND FCN keys	6
FCN key but no MENU key	1
No FCN key	2

If you have the convertible accessory, the phone NAM must be reprogrammed from the convertible handset. (Make sure that the personal phone is disconnected from the convertible accessory before reprogramming the convertible.) The handset type can be read from the label on the back of the handset. The keystroke sequence number is determined from the KEYSTROKE SEQUENCE TABLE. If you have the convertible accessory, and wish to use it separately as a standalone mobile, you may obtain an additional phone number and reprogram this into the convertible accessory at this time.

KEYSTROKE SEQUENCE TABLE

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Determining the sequence Number with Convertible Handset

MODEL	HANDSET TYPE	SEQ.
-----	-----	----
3000	SCN2007A	6
6000	SCN2023A	2
6000X	SLN2020A	1
6000XL	TLN2659A	1
6800XL	TLN2733A	6

Choose one of the six initial reprogramming sequences from the Initial Sequence Table depending on the sequence number which you determined from previous tables in this file.

Initial Reprogram Sequence Table

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Seq. # Sequence

- 1 FCN, Security Code entered twice, RCL
- 2 STO, #, Security Code entered twice, RCL
- 3 Ctl, 0 + Security Code entered twice, RCL
- 4 Ctl, 0 + Security Code entered twice, *
- 5 FCN, 0 + Security Code entered twice, MEM
- 6 FCN, 0 + Security Code entered twice, RCL

Security code is factory-programmed 000000.

CPP2.TXT

Initial Steps: Before you proceed with the reprogramming procedure, be sure you have filled out the NAM Reprogramming Data Table herein:

- Step a: Turn on your cellular phone by pressing the Pwr or On/Off button. The power indicator in the display will flash.
- Step b: Enter the proper keystroke sequence determined from the Initial Sequence Table.
- Step c: The message, "01", will appear in the display to confirm the activation of the NAM reprogramming feature. It also indicates that you are at the first step in the NAM reprogramming sequence. If this message does not appear, it may be due to one of these reasons:

- (1) The initial sequence may not have been entered quickly enough. The appearance of zeros in the display will indicate this. Press Clr and Try again.
- (2) The six digit Security Code may have previously been reprogrammed into your cellular phone. If this happens to be the case, you must re-enter the activation sequence using the assigned security code.
- (3) The maximum number of times that your cellular phone can be reprogrammed from the keypad may have been reached.
- (4) The ability for your cellular phone to be reprogrammed from the keypad may have been disabled or cancelled.

REPROGRAMMING PROCEDURE: Reprogramming for a single phone number can be as quick as a four-step process or may take up to 11 steps, depending on how many programmable features you wish to review or change. The phone always has some data programmed for each of the features, whether that data is standard programming performed at the factory or data provided by someone who programmed the unit previously. If, while you are reprogramming, you are satisfied with the value already programmed for a particular feature, simply press * to move to the next feature. To perform the following steps, it is necessary for you to refer to the completed NAM Reprogramming Data Table. If you enter a digit incorrectly, press the Clr button to start again.

REVIEWING of NAM REPROGRAMMING: Once you have completed the reprogramming steps, review the data by repeatedly pressing *. Check to make sure that the data reprogrammed matches what you wrote in the NAM Reprogramming Data Table. Make any required changes.

STORING the DATA: If you are reprogramming a single phone number, press SND to store the programming data when you are satisfied that it is all correct. A two-digit step number (01-11) must appear in the display in order for you to store the data. Press * until one appears and then press SND. Your personal or portable cellular phone is now ready for normal use, if you are reprogramming a single phone number.

REPROGRAMMING the Second Phone #: If "012" appears in the display after you have pressed SND to store the programming data for the first phone number, you are ready to repeat some or all of the ten steps, this time for a second

CPP2.TXT

phone number. The 01 indicates that you are ready to enter the System ID data (step 1) and the 2 indicates that you are reprogramming data for the second phone number. The phone assigns the same security and lock codes (steps 7 and 8) for the second phone number and as so skips from step 6 to step 9. There is no step 11 when reprogramming a second number.

If "01 2" did not appear after reprogramming the first phone number, and you wish to reprogram a second number, either the second phone option has not been selected (step 10) or your phone is not equipped for dual system operation. Once you have completed the reprogramming steps, review the data by repeatedly pressing *. Check to make sure that the data programmed matches what you wrote in the NAM reprogramming Data Table. Make any required changes Press SND to store the programming data when you are happy that it's all correct. (A two-digit step number (01-10) must appear in the display.)

Your personal or portable cellular phone is now ready for normal use.

NAM REPROGRAMMING DATA TABLE

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STEP	DESCRIPTION	# OF DIGITS	SOURCE
01	System ID #	5 Digits	Sys Op
02	Cellular Area Code	3 Digits	Sys Op
03	Cellular Phone #	7 Digits	Sys Op
04	Station Class Mark	2 Digits	Sys Op
	(Usually 14 for 832 chan., 12 for standalone mobile)		
05	Access Overld Class	2 Digits	Sys Op
06	Group ID Mark	2 Digits	Sys Op
07	6-Digit Secur. Code	6 Digits	Phone Owner
08	3-Digit Unlock Code	3 Digits	Phone Owner
09	Initial Paging Chan.	4 Digits	Sys Op
	(Usually 0333 or 0334)		

10 Option Programming 6 Digits

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/-----Handset Internal 1 Dgit      Phone Owner
        Speaker disable
        If your install, has a seperate
        External Spkr/VSP unit
        The handset internal speaker
        must be disabled.
        1 = disabled, 0 = enabled.
        This bit normally enabled.
/-----Local Use 1 Digit      Sys Op
        (Normally enabled
        1=enabled & 0=disabled)
/-----MIN Mark 1 Digit      Sys Op
        normally disabled

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1=Enabled, 0=disabled
 /-----Auto Recall 1 Digit Always 1
 /-----2nd Phone # 1 Digit Phone Owner
 normally disabled
 1=Enabled & 0=Disabled
 /-----Diversity 1 Digit
 (based on the # of antenna ports
 on your cellular phone
 0 = standard 1 Ant. & 1 = Optional 2 ant.

=====Optional programming data entry

11 Option Programming 3 Digits (Cont'd)

/-----Long Tone DTMF 1 Digit Phone Owner
 (normally disabled)
 1 = Enabled & 0 = Disabled
 /-----For future use 1 Digit Always 0
 /-----Eight-Hr. Timeout 1 Digit Phone Owner
 (normally enabled)
 1 = Disabled & 0 = Enabled

=====Optional Programming Data Entry

Step number - This number is the message that appears in the display during reprogramming.

NAM REPROGRAMMING STEPS

step	Keypad Entry	Display	Comments
01			Ready for step 1
1a	*	Current System ID	Factory Setting 000000
1b	New Sy. ID	XXXXXXX	New system ID
1c	*	02	Ready for step 2
2a	*	Curr. Area Code	Factory set at 111
2b	New Area Code	XXX	New Area Code
2c	*	03	Ready for step 3
3a	*	Cur. Phone #	Factory Setting 1110111
3b	New Phone #	XXXXXXX	New Phone #
3c	*	04	Ready for step 4
4a	*	Cur. Station Class Mark	Factory Setting 0/14 for portable/personal or 12 for standalone Mobile.
4b	New Station Class Mark	XX	New Station Class Mark

CPP2.TXT

4c	*	05	Ready for step 5
5a	*	Cur. Access	Cur. Access
		Overload Class	Overload Class
5b	New Access	XX	New Access
	Overload Class		Overload Class
5c	*	06	Ready for step 6
6a	*	Curr. Group ID Factory set at 00	
6b	New Group ID	XX	New Group ID
6c	*	07	Ready for step 7
7a	*	Current Sec. Code Factory set at 000000	
7b	New Security Code	XXXXXX	
7c	*	08	Ready for step 8
8a	*	Current Unlock Code setting at 123	
8b	New Unlock Code	XXX	New Unlock Code
8c	*	09	Ready for step 9
9a	*	Current Initial Factory Setting 123	
0334			PAGING CHANNEL
9b	New Initial	XXXXXX	New Initial
	Paging Channel		Paging Channel
9c	*	10	Ready for step 10
10a	*	Cur. Options	Factory Setting 010100
10b	New Options	XXXXXX	New Options
10c	*	11	Ready for step 11
11a	*	Cur. Options	Factory Set. 000
11b	New Option	XXX	New Options
11c	*	01 or 01 2	Ready for Review to program.
or			
Second		Phone Number	

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Now That conclude Part 2, Part 3 will the instructions for NAM reprogramming for all the phones I listed in part 1. If you have any questions or comments you can leave me mail on one of the following bbs's that I have listed below.

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