



5BHB>0B1 KPB0

=KHSXUSRVHRIWIHM+; HOĐDM+8RWW IJ WIR IQIRUP: HRSOH-RIWOLODOFIDOY WHEKQIFDOWONI DOG IXOFWRODOXVHUV RI WIH
VEKHGXOHG Ž/ŽITI UHODMHRI, 9; IXOFWRODODSSOFDWRQ HOKDOFHP HOW/ =KHMH; HOĐDM+8RWW DOG RWIHUDFFRP SDONIOJ
GREXP HOWOWRQ IRUWIJU UHODMHFDQ EHIRXOG RQ WIH1 HRUJIDI /Ž! "Z HEVILMI DW/KWO/(FFIZ Z Z/XVIJ/HGXFIJDI ILLUW/
IIOFUHODMHCIQ RFI

5BHB>0B Ł,ŁI

; HAROXMIROV VIR VIXHI ROBZ IQJ 50RZ Q 3AXHV KDYHEHHQ IQFOXGHG IQ VIXILV UHOHDMH(

- 53/1! =UDQ DODOFH; HSRUW HMUQQJ 30DFFXUDMM; HMXON/IRUW(H/8->7, 6HGJHJ
- 53/1 1\$ <XUSQXVFi HUFUW HSRUWBRW HMXUQQJ =UDQMHJ+P RXQW
- : 91ŁFI(@ KHQ DWWP SWQ) WI DGG DGGLWRQDQIDHV DIVMUD: 9 LVVDYHG DQG LVLQ D
 WDWXVRI 9SHQ" DQ HURULVUHFHYHG aQLWW9SHLDQG RI/3/8>66c b XSRQ
 DWWP SWQ) WI VDYHWKH: 9 DJDQ
- : 91ŁŽ(DOFHODG H. UR UHTXIMMROV UHMXONO) IQIOFRUHFWSUH HOFXP EUDOFHW

. HMXLOYRI WKHMH 5CRZ Q3WXHV FDQEHIRXCGRQ WKH1 HRUJIDI /Z! "ZHEVLMHDW/V

1 HRUJID /ž!" CLODOFIDOV ; HOĐOMH ž/žfl





\$@XQJP03>U>?HB~\$3.





=KLVOHZ TXHU, Z LODUHMUQ DODORQ: 9 YRXFKHUODHVZ KHUHWIHEXGJHWUHHUHOFHLVORW HTXDOM; WIHILUFDO,HDURI WIHYRXFKHU; +GGLWRODOD; LWZ LODUHMUQ DOD,: 9 YRXFKHUODH Z KHUHWIHEXGJHWUHHUHOFHLVGLIIHUHOWURP WIHFRUUHVSROGLQJ OLDHRQ WIH: XUFKDMH 9 UGHU;

\$000BPO > J > DBI BJ P * \$0 '

5BLKN#5107RWH0#40BNU#40BNU0>J>DBN

 $=KH\%25=$0 =$66(7=$3=72=$0 =/2$' TXHU\ Z DVP RGILHG \n X UH$

1 HRUJID /ž!" CLODOFIDOV ; HOĐOMHŽ/ŽfI













30NEE>0FJ D# 30NEE>0B 2 NABNO# \$AA~8LA>FB (TLNB00320

50RZ Q 3MXH: 91Lfl\$,)1%7)037-1+72%((%((-7-21%/-1)6%7)5%Žl -66%9)(%1(-6 -1 %67/47862* | 3) 1° %1) 5525-65 | ') -9) (= -567 | 3) 5%1 (2* °/6L #ff?? > 8321 %7) 0 37-1+ 72 6/9) 7,) Žł %+%1 KDVEH+QUHROYHG DVSDUWRI WILVUHODWH/

+Q9UDFOH, XJ QL Z DVDSSOLHG VR FRWHFVWKH LVXXHGHVFUEHG LQ5ORZ Q3VXXH: 912f/ > VHUV DUH QRZ DEOH VR VXFFHMI XOO) VDYH D: 9 LQ DQ 9 SHQ VMDWXV DI VMUDGGLQJ DGGLWRQDO (100HV VR) VR/H: 9/

B3NK@ONBL_BJP#O_>J>DB5BNADFOFFKJO

50RZ Q 3MXH: 91Łž , %1') //-1+ %1) Ž52 5) 48-6-7-21 7, %7: %612735) 9-286< &8(+) 7 ',)'.)(9-%7,)fl%1%+)ž)48-67-2163%+)83(%)67,)5)48-67-21*67/0*8672₂%1')/)(%1(-1'255)'7/<83(%)67,) &8(+)767/678672 £27,,)'.)("",-6%/2:67,) 86)572581 7,) "8(+)7, ,)'. 352')66*257,) 5)48-67-21"5)68/7-1+-1 %35) ')1'80 &5/31') &)-1+ '5)%)(KDVEHHQUHMRØHGDVSDUWRIWKILVUHDDMH/

+Q9UDFOH, XJ QL Z DVDSSOLHG VR FRUHFVWKH LVXXH GHVFUEHG LQ5QRZ Q3VXXH: 91ŁŽ/ > VHUV OR ORQUHUCHHG WRXVH WKH IXOFWRODOZ RUNDURXOG SURYIGHG DOG P DN FROMOXH WKH SUDFWIFH RI FDOFHOOJ UHTXLVWROVYLD 7 DODJH: HTXLVWROV

30NeF >0FLD# 5BM0F0FFKLO# \$AA*8LA>FB 5BM0F0FFKLO# \$AA > 1 BS 9>H0B# &KLU) NKI

=KH-RS\; HTXLMMRQIURP; HTXLMMRQSDJHZDVPRGLILHGWRHXWHWIDWUHTXLMMRQV Z LM/DQ9LJLQRI'-+=' "UHTXLMMRQVVRXUFHGTURP D1HRUJLD03 <= 7 DUNHMS/ODFH UHTXIMMRO" DUH QRWDYDLODE (HIVR EH VHOPFWGZ KHQ FUHDMQ) DQHZ UHTXIMMRQ IURP DQ HI LUMOJ UHTXLULMRO XVLOJ VKH - RS\ OURP I XOFWRODOMY

+ (DERRN > SVRQWH - RS\; HTXIMWRQIURP; HTXIMWRQSDJHKDYHEHHQUHWWJFWHG WR HOWUH VHOUFK UHWOVROO) UHWUQ; HTXLWWROVZ LWK DQRW LQRI '986b'

*BJBN>H/BADBN**/** &KIIIFR BJP&KJPNKH...

%250BJQO#%25*BJBN>H/BADBN#%25*/3NK@BODFD#(J@OJ?N>J@B/BADBN%OFFA

=KH/8->7, 6HGJHU, XLOG: URFHWKDVEHHQXSGDMGVRVMDWWSRSXODMMVMH

fl%Ł! /Ł! : HODVHž/žfl





. +=/C-9. / ILHOSLQ.WCH-6/. 1/; WDEOH/ +OMCRXJK Z HGR ORVWVH.WCLVILHOS.GLUHFWON LWV DEVHOFH Z DV FDXVLQJ WCH=UDQ, DODOFH; HSRUWWR ORWSRSXODWM.FRUJHFWON Z KHQ.UXQ DJ.DLQ.WWCH/8->7, OHG.J.HJ/

=KLVXSGDM/U+MRO/HV5CRZQ3MXH53Aı! =UDQDOOFH; HSRUW/HMXUQQJ30DFFXUDM/ ; HXXO**V**IRUW(H/8->7, 6HGJHJ

5BLKNPJ D 7KKHO# 4 OBNU# 4 OBNUO > J > DBN

=KH%25=..=\$9\$,/=%\$/\$1&(TXHU\ZDVXSGDWNGWRLQF0XGHDa=KUX+FFRXQMQU:HURGbSURPSWDQGFULMALIDY:U-MRXVQWRHTXHU\KDGWREHUXQIRUWRHHQMUHILVFDO\HDUFKRVHQY

5BLKNPJD7KKHO#4QBNU#4QBNUO>J>DBN

 $=KH\%25=*/=-51/=: 25.)/2: =$8',7TXHJ\,ZDVXSGDMGVR($

- 30F0XGHVKH4RXUQDQ2HDGHU<\vidvakVLQVKHUHXXQV
- 900 LOFOXGH 55C+P RXQWZ=\SHVŁ "+FWMDOYDOG; HFRJQ] HG"DOG\$ "+FWMDOY"; HFRJQ] HG"DOG RODFWHG"
- =KHFROXP QKHDGLQJ IRUWKH WMS LQWDOFH WDWXVZ DVXSGDWHG WR a+SSURYDO
 </MDWXVb WR EHP RUHGH/FUSWYH/

5BLKNPJ D 7KKHO# 4 OBNU# 4 OBNU 0 > J > DBN

=KLV CHZ TXHUX Z LOOUHMUQ DOOMAXUQDOODCHVZ LMX D EXGJ HWUH HUHCFH CRWHTXDOMA WXH ILVFDOXHDUWXDWW RO WXH MAXUQDOXHDGHW 3WZ LOOUHMUQ MAXUQDOY CRWXHWSRWMG RU MAXUQDOY SRWMG Z LWXLQ WXH ODWWP ROMW/

1 HRUJID /ž!" CLODOFIDOV ; HOĐOMH ž/žfl





=KH%25=(1&=5(&DSSOFDMRQHQJIQHDQGWIHFRUUHVSRQGQJTXHUUHVKDYHEHHQ XSGDMGTRUYHUMRQ'1/1/: OHDWHWHH+SSHQGL[- IQWIHBHDU/QG7 DQXDQTRUGHMMQV UHJDUGQJWIHFKDQJHW

%25 0 BJ QQ# %25 * BJ BN>H/BADBN# %25 * / 5BLKNPQ# N(JA 5BLKNPQ#) KKPJ KPB Ž "/7 /F>? FFFBQ

=KHORRWORWM%^6RQJ =HUP 6LDELIQMYN UHSRUWKDVEHHQXSGDWGSHUWKH1+<, PDSSIQJGREXPHQWWDWFDQEHIRXQGRQRXUZHEVLMDWKWB(ff7ZZZ/XVJ/HGXfiJDILLXW IIQfGREXPHQMMRQFFDMJRUXfILVFDQXHDUCHQG/

8RWM(=KLVU+SRUVZ DVU+DDVHG VR SURGXFWRQRQ\$fi \$fi fil!/

%25 O BJ QO# %25 * BJ BN>H/BADBN# %25 * / 5BLKNPO# 6QNLHQO' BOF@P5BLKNP

=KLVXSGDM:UHXROYHV5CRZQ3VXH537/1\$<XUSQXVFi HIFLVYHSRUVBRVYHMXUQQJ =UDQM:HU+PRXQM

=KH<XUSOXVFi HIFLVY HSRUWKDVEHHQXSGDMG WAFRUHFWDQLWXHZ KHUHWKH ; 3) 1 (-785) 6 " 5%16") 5DP RXQWZ HUHQRWSRSXODMQJ RQWKHUHSRUWL WKHUHSRUWZ DV UKOE\ OXQGFi ODW/

8RVM(=KLVUHSRUVZ DVUHODDVHG VRZ SURGXFVNRQRQ\$fi fi fil!/

=KH, XGJHW RP SODOFH Q? LMRQ U+SRUWKDV EH+Q XSGDMG SHUUHTXHWVURP W(H 911LFH RI QU/FDO+11DLUV =KH1RODZ LQJ XSGDMVZ HJHP DGH W(R W(H < XSSOPP HOMOD=DE(

- I ORUP XODVRQURZ ŽŽ Z HUHXSGDVMG VR) -Ł\$I-łž
- I HODY 1 Ž! VKUX 8 Ž! Z HUH XSGDVMG VR() `, -; _` °+SSOFDE(H) HODY LOWM/DG RI) I
- i , žŽ FHOOZ DVXSGDAMG VR UHDGb8HVV<XUSOXV′. H IFILVRU; HVHUYHH[FOXGLQ] =XLVARQ-DUJ\19YHUb

8RVM(=KLVQ?LMRQUHSRUVZDVUHDDVHGVRC:URGXFVNRQRQ\$fi'fifle!/

=KH<NDMMPHQMRI-DMKODRZVQ?LMRQU+SRUWKDVEH+QXSGDMMGSHUWKH1+<,PDSSLQJGRFXPHQMWKDWFDQEHIRXQGRQRXUZHEVLMMDWKWMS(ffZZZ/XVJ/HGXfiJDILLJMWILLGFGRFXPHQMMRQFFDMMJRU\fILVFDQD\HDUCHQG/

8RVM(=KLVUHSRUWZ DVUHOĐOVHG VR SURGXFVVRQRQ\$fi'fifk!/

. XHVRVVXHVUDQVUURQVRV <2+; / +FFRXQVVRQ\$ffllefl fll! *VKHIROORZ IQJ UHSRUWZ HUH

1 HRUJID /ž!" CLODOFIDOV : HOĐOMH ž/žfl





XSGDVMG VR GL/SOD\ VKH DSSURSUDVM DFFRXQVGHVFUSVVRQV SXUXXDQVVR VKH UHSRUVGDVM(

- 6HGJHU2LWRUX; HSRUW 9; ; 1 flež
- <FKHGX0HRI 9SHLDMRQRI +JHOF\ OXQGV; HSRUW 9; ; 1fll \$
- , DODOFH<KH+WE\ OXOG, 9;; 1fk%
- : URILWIDOG &RW < NOMP HOW 9; ; 1 fl£\$
- ; HYHOXH < XP P DU\(; HSRUW 9; ; 1 fl\(! \)
- <FKHGXOHRI 9SHLDMRQRI <VMGHQVV+FVMYLMHV, 9;; 1f1Zf1
- , XGJHW+FWYLW; HSRUW 9; ; 1 flž!
- 1 UDOW, XGJ HW+FWYLW; HSRUW, 9; ; 1 flž "

Ł +/#fił &#. # -#, +-/. 1 #-# -#)#ž. #" /+, -+" O! / +* /&# 1 ##(+\$f0)2 \^i \^\

=KHEHORZ UHSRUWIKDYHEHHO XSGDMG WRUHMAUQ KILMRUFDOGDMDIRU5HOQHMDZ < MDMM >QIYHUMUVIGXH WRIFROWROGDMRQ DOG WADOMMRQIQI WRI<2+; / ?HOGRUWI 8R RWKHU IOMMYMMROV WKRXOG FHIP SDFWG F\ WKHMHFKDOJHW

- +: ?RXFKHU2LWRU\; HSRUW 9; ; BfIfI\$
- 6HGJHU2LWRUX: HSRUW 9:: 1 flež
- XGJHW+FWYLW; HSRUW, 9; ; 1 flž! ,
- 1 UDQW XGJHW+FWYLW; HSRUW 9; ; 1 flž".
- = 31 + ? HOGRU9 E (01) DMRQ; HSRUW 9; 30Ž\$+
- =31 + ? HOGRU: D\P HOW HSRUW 9: 30\(\tilde{\Z}\)\$.
- : 9 < XUSO(V + QDO)(VLV; HSRUW, 9; ; : flLt

>SGDM/VZ HUHP DGH VR ERWH GWWTF DOG ERWH GW/VTF

* BJ BN>H/BADBN# -KQNJ >HO# 6Q? QUOPBI -KQNJ >HO# * BJ BN>PB -KQNJ >HO

=KLVSDJHZ DVP RGLLIHG VR P DNH. XVLQHW > QLVVD UHTXLLHG I LHOD/

6BP8L) FI>J@F>HO'6QLLHU&E>FI#&KIIKJ' BOFIFFKJO#' BOFDJ&E>NPOBBHAO#' BOFIB 9>HOBO#' BL>NP BJP

=KLVSDJHZ DVP RGLLIHG VR WKDWWKHVHDUFK ER[IRUWKH7 DQDJHU3 RQWKHGHSDUM7 HQW Z RXCG UHFRJQ]HXVHUVZ LWK WKH_,`, XVLQHW>QLW ULP DUX: HUP LWMRQ 6LWW

(JPBNLNFOB &KI LKJBJPO# \$LLNKR>HO# \$LLNKR>HO# O KJFPKN\$LLNKR>HO

=KLVSDJHZDVPRGLLIHGWRUHMUQRQQXXVHUVIRUWKHLQMWMMRQRIWKHXVHUWKDWWVŒJJHGLQY

1 HRUID /ž!" CLODOFIDOV

fl%Ł! Æ!





7N+RBH+JA (TLBJOB~(;

7N/RBH-JA (TLBJOBO# \$LLNKRB 7N-JO-@PTKJO# \$LLNKRB 7N-JO-@PTKJO 25 J>RFD>PB PK PEB: KNOHOP

+: $\mbox{HRSOHRIWI[}$ $\mbox{IRUWMH}_Q3 <= 9: /; +8. 90/3:8>66 \mbox{HURUKDVEHHQDSSOHG DVSDUWRIWUVUHODVH/} = KUVHURUZ DVHOFRXQMUHG Z KHQDWMP SWQJ WR DSSURYHDQ/[SHQMH]; <math>\mbox{HSRUWZ}$ KHUHOQHVZ HUHDGGHG RUUHP RYHG DQG D. , 3Z DVUHTXUUHG WR DQDZ DSSURYDØ = KHHURUVKRXQ5 QR QRQJHURFFXUDQG DSSURYHUV WKRXQ5 EHDEQHWR VXFFHWIXQ5 WHQG EDFNDQG DSSURYHDV OHHGHG/

7N>RBH>JA (TLBJ 0B0# 0 > J > DB (TLBJ 0B06B@0NFU# 5B>00FDJ \$LLNKR>H KNG

; HDWJQ+SSURYDO@ RUNVHDUFK UHXOVORZ UHXUQ, XVIQHW>QLWSHFILIF HP SOR\HHV : UHXIRXVQ`VXHVHDUFK UHXOVFROMIQHG HP SOR\HHVIURP DOD, XVIQHW>QLW

. CHECKIC WILLIAM DOTA CHINACHT SWITTING DU AVEZ 100 - COLOR

(I LHKUBB 6BHC6BNRF@B#7N\rBH\) A (TLBJ OBO# (TLBJ OB 5BLKNP#&NB\rB^O KAFQJ

=KH+FWROV7 HOX RQ/[SHOWH; HSRUW UHDWRQOR (PROJHUGL)SOD\V WKH+SSQf?LHZ - DWK +GYDOFHRSWRQIRULOWWWWROVORVXWQJ WKH-DWK+GYDOFHIXOFWRODOWV

2 PEBN1 KPBO

: HRSOHKRIWOLODOFIDOV5BHB>OBł (II LVFXWHOWO) VFKHGXOHG IRU6>POWA>U°1 KRBI ?BIVٰ fii/ł/BRX Z LOOUFFHYHDUPP LOGHURI Z KHOLWILVXSGDWHZ LOORFFXW

ORUEXVIOLAN/IP SDFWHP HUI HOF\ LWXHV" FROMDFVWKH

1 HRUJID /ž!" CLODOFIDOV ; HOĐOMH ž/žfl fl%Ł! Æ!





| SDWZ RUG/ /IP DIOXHOSGHMY" XVI/HGX WR REWDIO VHDYIFH ØYJ IQ FUHGHOWDOV" |
|--|
| |
| ORUIQIRUP DMRQDERXW761 >FJPBJ>J@B6@EBAQHBORU <huyifh6hyho1xigh0qhvs0hdvh< td=""></huyifh6hyho1xigh0qhvs0hdvh<> |
| · |
| YLVLV/KWB/(FFZ Z Z/XVJ/HGXFFXWRP HLCVHLY/LFHVFMHLY/LFHCODYHOOJXLGHOOHV/ ORU><1 |
| VHUYLFHV VMDMXV SODDMYYLMLV <u>KVMS (FFMMMMVXVJ)/HGX</u> / |
| |

1 HRUID /ž!" CLODOFIDOV ; HOĐOMHŽ/ŽfI