



PRESCRIPTION DRUG ABUSE

American College of Physicians
A Position Paper
2013

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L 9G197L ; ' F9, LM'
6 ' F2 7L 95 / ' L9, L OTG 2 27G

02; ; 'FLRF2M7L TL ' 2L 2FG07' F# 0 # !4L 2GPF/L7% 92G 7T%FL P56 G# L
R G%Q59; '%,9FLM' L ' 50L 7% P 52L 952 TL 96 6 2M' L9, LM' L 6 ' F2 7L 95 / ' L9,
OTG 27G< #H 096 G ; '# #< 0 2#H !@ 57' L 2 27!0' F# L< 9L 0 2#H 27' M
F9F# HL 742M 0 MHL 6' G 2 PG# HL 9P/5G 2 ' 97/# HL PG7L 57797#
HL F/9FTL 2 99%# HL FTL 'R6 7# HL '77' M L 2 5Q# HL 0 4 2 L
'06 7# HL 9' L G7/# "L7% ' , , F TL 2 2G# 2 ; ; F9Q% TL M' L L 9 P49,
' / ' 7M 97LQ LP5TLOV: N2

9RIM!! 2MIN02E ; ' F

6 ' F2 7L 95 / ' L9, L 0TG 27G F GF2 N07L FP/ L PG 2 02%5 02 "L 6 ' F2 7L 95 / '
9, L 0TG 27G HLOV: N'L 95 TL ; ' FL < Q 25 5 L, F96 L 6 ' F2 7L 95 / ' L9, L 0TG 27G
: 8VL 2.7%; ' 7% 7! ' L 5L ' G 25%5 02 # L: 8: VJ?

9; TFZ 0N\$ LOV: NL 6 ' F2 7L 95 / ' L9, L 0TG 27G

5FZ 0MF GFQ % 2.7% 22P 536 TL; 09M! 9; TL 519FL; F09, L 9G 207L ; ' FG, 9FL %P! M07 5#
79M, 9F1; F9, 2NPG 0' GL; ; ' F06 TL 79M! ' IF; F9%P! '%, 9FL 96 6 ' F 2 5L, 9F1; F9, 2NPG 127L 7T
, 9F6 # TL 7T16 ' 7G < 5! M972 #6 ' ! 0 703 0 Td [<1B>16] TJ 0.4283 0 Td [(703 0 Td [<1B>16] TJ 0.4283 66 [<1B>16]

F G2 M7L6/L

4 ?&+?9& +?&& >G & 8 > & & >088D ? >8+9B8 + >) +9
. 8>) E> + . 8 * +?> B?\$. 88& 9> 9> &+#> ?>08#+&& +?>880(>. >
08 9 880?& +> 8B#> B9 >* G >8 5B88 >?. >0 8?& 80 ? >8+> > 8B#
* . +&. 88+#+>08. #8 * >+ >B+ 8#. >8 + . * > 8B#>? 9?&+#> \$G&& &++

+, 1(0&* 0 &'

LOV: VL P 0M7!'L PGL 7%L '7M5L ' 50L ' FQ2' G % 2723F M97
 < =LGFQ TL,9P7%LNO MJ16 2527L 6 ' F2 7G/' 'L: CL7%95%FO %M4' 7
 L; F GF2 M97L; 27LF 52 Q F#M7 7 @25J F#026 P57M19FG%MQ L,9F7976 ' %2 5
 ; PF, 9GG N15 0M97!' L27LNO' L; F Q9PGT' F#J M6 2527L<01 > ±0 %LPG%L
 ; G! 09M' F; ' PM2 L%F/ G7976 ' %2 55LR2027LNO' L; 0M6 97M02 ,LNO' G L%F/
 PGFG- - ?> LG2LNO' TL9 M27' %LNO' L%F/ LNO' TL6 9GMF !' 7M1LPG%, F96 L
 ,F27%9RF 5 MQ L,9F, F' 2 79M' F: I N> IF; 9FM%LNO' TL 9MNO' L%F/ L, F96 L97'
 %9! MFL 75TL ? > L9 M27' %LNO' 6 L, F96 L L%F/ L% 5 F9F9M' F0F 7/ ' F# 7%975T
 V? > L 9P/ ONMNO' 6 L97LNO' L 7MF7' M L 0' LGFQ TL79M%#B 6 97/ LNO9GLR09
 F; 9FM%L/ ' M27/ LNO' L; 27LF 52 Q FL, F96 L L, F27%9RF 5 MQ L, 9F, F ' #J 8? >
 F; 9FM%L27L L, 95R1P; @ 027LNO MNO' L, F27%9RF 5 MQ L0 %9 M27' %LNO'
 %F/ G, F96 L3PM97' L9! MFC 79M' F0F%TL, 9P7%LNO N16 9F LNO 7L- V> L9,
 M' 709 M27' %L; F GF2 M97L%F/ G F96 LNO, F9R7L- 6 2526 ' %2 27' L 27' M
 LLO%9% 0.383735 0-Td [9G
 O' LGV: VL FQ, PM0 L; G

7%½ MFTLP; ; 5 6 ' 7MØR02 0L27L %½MØ7LØL 5 9095L 9P5½ 96 ; 9P7½ 7T
%Q FG10' 50L97G @ 7!' GF P57/ L,F96 L; F GF2 MØ7LFP/L PG2 L GF P5M
9,LØ' L 9Q #LØ' L MØ7 5 7ØMML97L FP/L PGL79MGM M; F GF2 MØ7
%FP/L PG16 TLØ' F ,9F L ' L6 9F L%7/' F9PG2LØ' L 5%F5LØ 7L7LT9P7/' F
; 9; P5 MØ7G' 96 ' L95%F; ' FØ7G6 ; F9; ' F5LPG; F GF2 MØ7GP LØL9/ 72Ø
6 ; 2F6 ' 7MLNØ 59L; 9G2 5 LØ NF MF ' Ø97LL2S %½! 96 ' L6 TL PG15 ,ØQF
6 ' ½ MØ7Ø9,L LG 9PG19FL 79M' F; ' FØ7LØLGQ L6 97' TL

O' L ' 7MFG,9FL ' ½ FL L ' ½ 2½ ' FØ' G< ±0 G Ø6 M%Ø M
ZLOV: : L Ø6 7TL ØØ #MM ' ½ FL FM L ' 7' ,22 F2 G½ > L9,LØ' L FM
; 9; P5 MØ7LØ9LR' F L79M! 7!' FL9LØ9G 2' L; M 7MØF!' 2Q%Ø2 0LØG/' G
< 9F LØ 7L: ØM6 / L%25±9,L6 9F, Ø2' L @2Q 5 7MØØG< ±,9FL N5 ØØV
!97G! PØQ L%TGZLOV: : # 7%ØØPG 9P5½ ' LNF24,9FL %½ MØ7LØL9FL PG19,
M' GLFP/ G'

1/ " 4 " 8##."*0& 1. (." /

F GF2 MØ7LFP/L PG1ØL; F9 5 6 LØF9P/ Ø9PMM' L 72M% MMØL F96 L: 888
MØLØVØLØ' LF ML9,L2!' F GLR ØØ2 0' FL2LPPF 5L F ØM 7L2LPPF 7L F Ø
LØP/ØL9,L% MØZLPPF 5R' ØVIFL 2F 272 L ' NR' ' 7L: 881 L 7%ØVØL,9P7%
NV> L2!' F GL2LØ' L7P6 ' F9,L% MØZLØR02 0LØFP/ ØZ!' 5PØ7/ L; F GF2 MØ7
6 ' ½ MØ7ØR' F L%MF6 2' %ØLØ' LF 5 M%Ø9FL 97M2 PØFTL! PGØ9,L% MØ?

O' L% MØF ML,F96 LØFP/ ØZLPPF 5L F ØZ!' F G%ØM %25L9Q FLØ M; ' F2%Ø
7L (> L9,LØ' L! GØM' L% MØZØ5Q %½; 95%FP/ G< 9F LØ 7L97' LØFP/ L9F
6 ' ½ MØ7L F GF2 MØ7L9; 2ØØR' F L2%7M2 %½L. > L9,LØ' L! GØ 5Ø9P/ 0
7 MØ7 5%ML2%Ø MLØ' LØ2 0' ØV MF MØ9,L; F GF2 MØ7LFP/L PGL 6 97/
; ' FØ7Ø7%ØØ L' FØ95#ØØØØP/ØL2%Ø M%ØØØ F9; 9FØ7 M5LØ2 0' ØF MG
9,L% MØL,F96 L; F GF2 MØ7LFP/L PG12LPPF 5L F ØZL7L95%F; 9; P5 MØ7L</'
N LØL - L' FØ95%Ø 0' L PØØFØ 97! 5P%Ø

B 2Q 7LØ' L2%7M2 MØ7L9,L95%F9!' % 7MØZL9PØØP/ØL 7%Ø MØ7 57#ØØZ
; 9; P5 MØ7L6 TL79M' LM42/ LØ' G16 ' ½ MØ7Ø ØZ! M%Ø9F6 TL ' L PG7/
9FL %½ M%ØØ; F GF2 MØ7L6 ' ½ MØ7ØZØM %Ø,1252 MØFP/ ØL Ø 952 T6 4' FG
7%ØF G FØ' FØ,9F6 P5 MLIF G 97GØØØØ' L2!' F GL2L7976 ' ½ 5PG19,L; F 1
GF2 MØ7L6 ' ½ MØ7Ø 7L95%F; 9; P5 MØ7LØ9P5½ ' LMF' M%Ø,9FL %Ø! MØ7L G
R' 5L ØT9PØØL ' LØ9P5½ %Ø! ML 5; M 7MØ 7%ØØ 2L 6 2Ø Ø 9PMM42/
6 ' ½ MØ7L975L Ø; F GF2 ' %Ø975L TLØ' L2%ØØP 5,9FRØ96 LØØZM7%Ø#
7%ØØ L%7/' FØ9,L 96 272/ L6 ' ½ MØ7ØR2Ø9PM, F GF2 ' F479R5 %' Ø'

NØØ 59L79M 5 LØ M; F GF2 MØ7LFP/ ØØ QIF; ; 5!' %Ø' FØZL7%Ø9! 2' LG
M' L5 %Ø/ LØFP/ ØZØ5Q %½L, M5ØFP/ L9Q PØØGØZL5PF 7+PF 5L M/ 9F2 Ø⁸

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2%GF %Ø GØØ,LFP%Ø 59LØ QL'' 7LP7!9QF %½LØ' L ' ½ 2½; F9/ F 6 ?
7LIF ØØR19,L2Q LØMMØ< 52,9F72 # 52792Ø ' RL 9F4# 9FØL F957 # 7%
' S ØZLØW8#LØ' L 9Q F76 ' 7M !!9P7M 25ML ,,2' L< ±,9P7%ØJ- #V
2ØM7!' Ø9,L ' ½ 2½ ' 7' ,22 F2 Ø6 ; F9; ' F5L9 M272/ L; 9M7M 55L %½ MØ
%FP/ Ø M L 9ØØ9,L 9PM&JN6 25Ø7LØPF2/ LØWJL 7%ØØ 2 0' L L 59
,9P7%Ø L2ØPF 27/ L6 9P7ØØ,L F P½ØØ5ØZ/ LØ9PG7%ØØ,L; F GF2 MØ7ØR2M7
,9F% %Ø; M 7MØ9FL TL; ' 9; 5 L; 9Ø7/ L ØØ! MØF^{Ø#Ø}

O' LØ- #MM ' ½ 2½ ' 7' ,22 F2 Ø2%7M2 %Ø TL LØ %Ø! ØF %ØØ'
G6 ' LM; ' L9,L 97MØ5 %ØØ M7!' Ø,F96 L M5 ØØØ%Ø, ' F 7M6 ' ½ 5; F! M1
MØ7 FØPF2/ L2Ø 5T FØØWJL 7%ØØ HØ' L6 3FØMØ %ØØ! ØØØØ; ; ' Ø
MØ9 M2L; F GF2 MØ7Ø,F96 L LØØ: M6 ' ½ 5; F! MØ7' FØ N5 ØØ VL ' ½ 2%
' 7' ,22 F2 ØØ %ØØM%Ø ØØL: Ø6 ' ½ 5; F! MØ7' FØ 7%ØP, LØL JLØ2, ' F 7M

; 0 F6 ! 2 G, 9 F M' L G 6 ' U 9 7 N 9 5 % L P G M 7 ! ' G L 0 ' L L ! 4 7 9 R 5 % ' % L
N M 5 0 9 P / 0 L 9 6 ' L ' 7 , 2 2 F 2 G 6 T L 0 Q L P 0 2 2 5 L F 9 7 G, 9 F F ! ' 2 2 / L
; F G F 2 M 0 7 G, F 9 6 L 6 P 5 2 5 L 6 ' % 2 5 ; F ! M 0 7 ' F G L P ! 0 L G 0 2 7 / L G ' ! 2 5 0 0 9 F
G Q F 5 0 ! 0 F G 2 L M' L G 6 ' L 6 ' % 2 5 / F 9 P, # 9 M' F G B R ' F L 5 2 ' 5 L G ' 2 / L G Q F 5
6 ' % 2 5 ; F ! M 0 7 ' F G L P ; ; 9 F M 7 % 0 2 3 P 2 G L M' 2 L % 2 M 0 7 L 9 F M 0 9 M 2 L 9 F P / G
M L F P % P 5 7 M L G 5 5 C^m

1 / " / * ! + * Q & 1 0 & \$ 0 + . /

P 5 2 5 L ! 0 F G F L ' 5 2 Q % M 0 L ! ! 9 P 7 M 9 F M' L F 2 G L 2 L ; F G F 2 M 0 7 L 9 F P / L P G
2 7 L M' L 7 2 M % M M G L 9 M Q M 0 7 G M 0 ; P F, 9 G 5 L P G L 9 F P / G 2 ! 5 P % L M L ! ! 9 6 '
2 7 M 0 2 M % M 0 L 9 P 7 M F L 7 S 2 M # ; 2 7 # 9 F L 5 ' ; L ; F 9 5 6 G L 7 % M 0 L ' 7 0 7 ! '
! 9 / 7 2 0 7 2 7 2 7 M 7 % % 6 2 P G L 7 L ' L P L M 0 6 2 3 ' F ' ; M 0 7 G 9 P M 9 F P / L G, ' M #
P G L 9, 1 6 ' % 2 M 0 7 G M' F M 0 7 L G, F G F 2 ' % L 7 % 0 9 G / ' L F 9 F 0 P L M 0 L 9 / 7 2 0 Q
% ! 5 7 ' L 9 F 2 6 ; 2 6 ' 7 M L

9 7 N 2 P M 7 / L M L M' L ; F 9 5 6 L 2 G M' L % F 6 M L F 2 G L 2 L M' L Q 2 5 2 5 M L 7 % L
; F G F 2 M 0 7 L 9, 9 F P / G L F 9 6 L 8 8 8 L M 0 L O W 8 # M' L 7 P 6 ' F 9, L ; F G F 2 M 0 7 G 2 ! F G %
N 8 > L ; F 9 6 L O X L 2 5 2 7 L M 0 L N 8 L 2 5 2 7 # L 9 6 ; F % R 2 0 L L L ; 9 ; P 5 M 0 7 L F 9 R M 0 9,
8 > 2 0 ' L Q F / ' L 7 P 6 ' F 9, L F M 2 ; F G F 2 M 0 7 G, ' F L ; 2 M L 2 ! F G % L F 9 6 L V ?
2 7 L 8 8 8 L M 0 L O X L 2 7 L O W 8 2 ' N R ' ' 7 L 8 8 : L 7 % O V : V # ; F G F 2 M 0 7 G, 9 F L G 2 6 P 5 7 M G
2 7 ! F G % L F 9 6 L - L 6 2 5 2 7 L M 0 L 7 ' F 5 L - L 6 2 5 2 7 L 7 % L 9 F L 9 ; 2 2 2 7 5 ' 2 G L F 9 6
9 P M I - ? L 6 2 5 2 7 L M 0 L O W 8 ? L 6 2 5 2 7 ?ⁿ 2 0 1 % 9 G L 9 ; 2 2 2 7 5 9 L ' ! 6 ' L 6 9 F
F % 2 5 L Q 2 5 5 L G 9 ; 2 2 2 7 R ' F I F , 9 F 6 P 5 M % L G S M 7 % % 1 F 5 G L 6 ' % 2 M 0 7 G M
5 5 9 R L 5 7 / ' F L 9 G 2 / L 2 M F Q 5 5 9 F M F M 7 / L ; M 2 7 M 6 2 L ; 2 ? , M F F Q 2 R 2 / L M'
G 2 2 2 7 M F 9 R M 0 L 2 L ; F G F 2 ' % L 9 7 N 9 5 % L P / G 2 L F ! ' 7 M I' F G 7 % L 2 0 6 9 F F 1
5 M 0 7 L R 2 M 0 L 2 ! F G G 2 L P G L 7 % 0 9 P 9 G # 5 S 7 % F L 7 % ! 9 R 9 F 4' F G ; 9 G M %
M M M' L P G M 7 M 5 2 ! F G L 2 L M' L 7 9 7 6 ' % 2 5 P G L 9, 1 9 ; 2 2 2 7 7 % L F 5 M % 9 F P / G
2 6 L ; F % 2 M 5 L % Q F G L, , ! M 0, L P G M 7 M 5 2 ! F G G 2 L M' L S M 7 M 0, L ; F G F 2 M Q
P G ? P F M' F 6 9 F # M' T L P G 0 7 ' % M' L S M 7 M 0 L R 0 2 0 L P ! 0 L 6 ; 2 7 G G B 2
G M 0 6

F GF2 M7L FP/L PG

0' L % Q FGI 97G @ P 7!' G9, L: F GF2 M7L FP/L PGL F LGF2 PG 7% M'
! 90 G L F L P G M7M 5 L F GF2 M7L FP/L PG L 96 6 97L 6 97/ L 9 M M' IT9P7/
7% M' L 5% F5' 55

7L%207L0L0' L'9009, LNF M/ L0' L%2 M07L7%9M' FL%Q FGL0' 50
!97G@ 7!' G G9! 2M%R20L: F GF2 M07L%P/ L PG#10' F L F L 59L9M' FL900
M0L97G%FL 0' G12! 5%L79M075L0' L! M 5L900, L%P/ L; PF 0 GGL PML59
M' L'9009, L0' L%9! MFL7%L6 ' F' 7! TL996 L00M0 M, F!' %L0' L%G' 7G7/
9, L0' GL6 '%2 M07GL 0' F L2G 59L0' L! 9796 2L9009, L% M0L7%L50M
; F9%P! M0M7L G79M% TL0' L #B 754' L%2 M07L0L0' F92L7%9M' F
%P/ G0 M0 QL79L !!'; M%L6 '%2 5PG# %2 M07L0L96 ' L! 97M95%L
P G7!' G 7L' L2 7!' %L T2GF 7!' L7%L P 52L; F9/ F6 GP! 0LG '%2 20C
!0LT #L%P/ L PGL7%L %2 M07L90MMS T FG7' F5L&- N L 2597L2L
; F Q7M 5L0' 50L F #5RL' 7,9F' 6' 7M L F6 ' #L7%9M' FL900

% % (" * \$ " #. %4/ & & * / *! 1 (& +(&4) ' " . /

0' L; 0TG 2 27L6 PGM ' LP; 1M1% ML97L0' L; F9; ' FLPG L9, L6 '%2 M07G 7%L
NF M' 7M07! 5%27/ L; 27L6 '%2 M07GL 0TG 2 27G0 QL7L M2 59 52 M07
M0L6 7 / ' L7%F 52 QL; 27# PML0L%0L9LF G 97G 5TL7%27L !! 9P%R20L
G27M22L Q%7!' ? 6; F9Q6 ' 7M07L P7! M07LM F9P/ 0L0' L09FMMF6 LPG L9,
9/8892 0 T3 Tm [()] TJ 0.36987 0 Td [(6)] TJ 0.83276 0 Td [46958(.,315)] TJ 0 Td [(6)] TJ 0.83276 0

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% ++! *! .1\$!) & & 0 & *

O' L ? 1 99% 7% FP/L % 27 23F M07L< 42F G 97G 5 L,9FL 7PF27/ LM' G,' ML 7% ,, '! M2 7' G9,L6 ' %2 27' G27! 5%27/ L; F GF2 M07L%FP/ G/ ' 7' F2 %FP/ G 7% 16 ' %2 M07G LND G9Q F2 0M,9FL ; ; F9Q 59,L7' RL; F GF2 M07 %FP/ G 5 ' 527/ L9,L L 7%; F GF2 M07L%FP/ G 7% %FP/ L6 7P; ! NPF27/ G/17% P/G L M 59L0 GF / P5 MFTL P M 9F2 M L9Q FL M' L6 7P; ! NPF27/ #6 F4' M7/ # 7% 5 ' 527/ L9,L 299/ 2 5; F9% P! M 6 ' %2 5% Q' G 27' G 99% #! 9G ' M G 7%; F9% P! M 6 M 6 2MF %2 M07L M 2GF G 97G 5 L,9FL %Q 7! 27/ LM' L; P 52 0' 50L TLO' 5 27/ LM LG ' ' %2 779Q M07G M 6 4' L6 ' %2 27' G 6 9F L ,, '! M2 # G,' F 7% 6 9F L ,, 9F% 5 L 7% TLO' 5 27/ LM' L; P 52 L' M M' L !! PF M # G 2 7! ' 1 G %2 7,9F6 M07LM' TL7' ' %2 7' G 7% 99% G M L6 27M27 L 7% 26 ; F9Q LM' 2F0' 50C

O' L L; F9Q% G M' L; P 52 LR 20126 ; 9FM7M %FP/ LG,' M L27,9F6 M07LM M 2G' G 1M 1F % 7% 2G 27L 7L27MF ! M2 L,9F6 M L M6 27M27G LR' ; /' LM M ! 97M27G M' L6 9GMF ! ' 7M FP/L , ' ML 96 6 P72 M07G, F96 LM' L L 7% 6 27M27G 7L7% S M L FP/ 1 ; ' ! 22 L7,9F6 M07L 0' L LG F G27,9F6 M07 27LM' L27MF G M, L27,9F6 27/ L 9! NFG 7%; M 7M 9PMM' L2G G M L F L P7% F F Q2 RL 7% R0' 7L L' S' F M 7M 2 ML! 96 ; 5 M7/ LM' 2LF Q2 R 0' ' 50! F L F9,' G27 5 L,9F6 M07LG' ' NFG, 9F9! NFG, 0 F6 ! 23G L PFG # 7% 9M' FLO' 50L F L; F9,' G27 53 M 97M27G 7LB 5 F M L < LCP6 6 FTL9, LM' L 7' RL G,' M L27,9F6 M07-#% M 25 %27,9F6 M07L 9PMM' LG,' M L2G #, ! NFG M L 97G% FLR0' 7L6 427/ LM M 6 ' 7M% ! 2297G 27,9F6 M07L,9FLO' 50L F L ; F9,' G27 53 M L 23 PGR 20L; M 7M 9PMM' 2LF95 G27LF %P! 27/ LM' LF23G ,F96 LM' L%FP/ # 7% LCP6 6 FTL9, LM' L ! M9F% M M NG FQ L G M' L G 9FM' 27,9F6 M07L27LM' LG' ' M C

7L P5TLOV: G M' L L ; ; F9Q % LF23L Q 5P M07L 7% 6 27 M07L M M/ T < 4,9FL SM7% %1F 5 GL< 4 7% 597/ 1 ! M7/ L< 49; 292G G; F M9, L , ' % F 527 22 M2 L M L % F G M' L; F GF2 M07L%FP/ L PGL 7% 6 F 5 M % 9Q P % G ' ; 2% 6 2 ? N ' ! N L 46158 0 Td ((:)) 1 TJ 0.5.OI ((I) 0.53168 0 Td ((5) 5) TJ 0.27265 0 Td ((T) 5) TJ ((%) 5) TJ 0(M) 5) TJ Td R8 0 Td ((:)) 0 Td 0.33302 0 Td 47 Td 53168 0 Td ((6) 5) TJ 0.82 Td 34G-> 5) TJ 3

.1\$ *#. ") "*" \$" 4

7%FL0' L 97N95% P G7!' G !N9,L 8I V#L0' L L' G1 5G' %L LGV16 L
,9FL 97N95Z/ L0' L6 7P, !NPF #L%ZV2 P107# 7%L%ZG' 7G7/ L9, U 97N95% L
G G7!' GLB 7TL; ' F97LR09L6 7P, !NPF G%ZG' 7GG#26 ; 9FV#L' S 9FV#L9F
!97%P! NLF G F 0LR20L 97N95% G G7!' G6 PGMF / ZMFR20L L P75 G
' S 6 ; N#4' ; NLF !4L9, L 5G0! 4G9, U 97N95% G G7!' G 7%16 ZM27LF !9P%G
N0L !! 9P7M, 9FL 5L 97N95% G G7!' GF !' ZQ %L%ZV2 PM%#9FL9M' FRZG
%ZG 9G%9, ZL 5LF / ZBF 7ML F LF @ZF %L0L6 ZM27LF !9P%G9, U 97N95%
G G7!' NLF 7G! N07G TL0' L Z 0 F6 !2 G F LF @ZF %L0L6 ZM27
F !9P%G L PVL F L79MF @ZF %L0LF ; 9FV#L' 7G7/ L27, 9F6 N07L N0' L; M 7M
5 Q 5N0L0' L ?

O' L U5 G22 G 97N95% G G7!' G27M0L, ZIG0' %P5 G97L0' L G09,
N0' 2FL PFF 7ML !!'; M%16 ' %2 5PGL 7%; 9M7M2 5, 9FL PGL 7%%; ' 7%7!' ?
B !0' %P5 L L%P/ G Z! 5P%Z7/ L0' F9Z#6 FZP 7 # 7%10 5P! Z9/ ' 7G7/ 0L G
* 0 Q L L02 0L; 9M7M2 5, 9FL PG#79L PFF 7ML !!'; M%16 ' %2 5PG GZ
NF N0' 7M27L0' L 72M%L MMGL 7%L L5! 4L9, L !!'; M%1G, ' ML, 9FL PGL P7% F
6 ' %2 5G; ' FQZ97ZL N0G9P5%L ' L79M%10 N6 FZP 7 L0 G ' ' 7L; ; F9Q %L 9F
6 ' %2 5PG L27IGQ F 5GMMGL !0' %P5 L L%P/ G0 Q L PFF 7ML !!'; M%16 ' %2 5

7L '!'6 'FLO: QM' L LF 5 G% L; F9; 9G%PF5 .8

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' 7 N9L TL 9! 4', ' 5 F27M9%P!' % L 25 < 2N (=27L ' FP FTLOV: NM9LF @P2
' %P! M97L! 9PFG 6, 9FL 5; F GF2 ' FGF / 23MF27/ LR20LM' L LM; F GF2 '
! 97N95 %CP 0M7! ' GL 0' L 25R9P3%F @P2 LM' L ' ; F0 ' 7N9, L ' 50L 7%
P6 7L ' FQ2' GN0' 0M 50L L6 7% MFTL 7% ! 96 ; F 0' 7GQL; F ! M97' F
' %P! M97L; F9/ F 6 L, 9FL6 ' M %97' L 7% 9M' FL9; 22/ 6L 27L! 95 9F M97LR20
F 5 Q7M; F9, ' 627 50! 2 M G' 0' L L 59LP; ; 9FM L6 7% MFTLM 272/
; F9/ F 6 L97LF G 97G 5 L9; 22L; F GF2 27/ L; F ! M' GN0 NR9P3% ' L574' %M9
LF / 23F M97?'

L 7% 9M' F6 ' %2 50! 2 M G2 7' % LQW815 NMF9; ; 9G7/ L6 7% MFT
' %P! M97 5F @P2 6 ' 7M0L PV, 0F27/ LQ5P7MFTL', , 9FM L 0' L5 MFL S; F G%
G; ; 9FM, 9FL %9; M7/ L; 9GMQ L27! ' 7M0 GN0L 7! 9PF / ' L; 0TG 27GN0! 96 ; 5 ML
' %P! M97 5F @P2 6 ' 7M0LP! 0L G LR 2Q FL9, LM' L & - VL LF / 23F M97L, ' L
, 9FM9GLR09! 96 ; 5 ML LQ5P7MFTL! 9PFG L97L; 27L6 7 / ' 6 ' 7M 7% 9M' L
F ! 9/ 72M97L9, LP 0M7! ' LFG L29P% FG

7L P5TL: 8#LOV: 0L 97/ F GR96 7L FTL 979L !4L < 1. - = 7%
97/ F G6 7L 25 ' M7/ L < 1: V=27M9%P!' % L 25M' L M9; L 6 ; ' F27/ L9,
F GF2 M97L 25G < = ! M < LJ: JV=#M9LF @P2 L6 7P, ! NPF FGN
, 9F6 P5 MLM6 ; ' F1; F99, LQ F97G9, LM' 2L; F GF2 M97L9; 2 ML; 27425 FGL 0'
5 / 25 M97LR9P3%F @P2 L9P/ L6 4' FGN0; F9%P! ' LM6 ; ' FIF G3M7NQ F97G9,
M' 2L9; 22L; 27L9P/ GN0 M! 779M ' L! FPG' %G349840.127266.08541(G.38373-053)T(G054TJ9536469

' 7 52 G,9FL, 2PF L0L %0' F L0L%,27' %; 0TC2 27L9 52 M07GP7%FM' G
F / P5 M07GQ FTLR20L ! 0LMMML 7%6 TL2! 5%L6 97' MFTL; ' 7 52 G! F26 27 5
! 0 F' G! 7%0FLPG' 7G07L9F59G0,16' %2 552' 7G 2
025 L0' 16' %2 5196 6 P72M10 G' 7' F 5TL '' 7LG; ; 9FVQ L9, LMMML,, 9FV0
M0L %F G1021 F9R27/ L; F9 56 #Q F2PG; 0TC2 27G 7%6' %2 519! 2 M 00 Q
' S F G%L 97!' F7GM M S' G2Q L9! P6' 7MM07#F; 9FV7/ # 7%LNF M 6' 7M
F @2F 6' 7M06 TL0 Q L0' L%Q FGL,, ! M09, L%039PF / 27/ L0' L; ; F9; F2 MILPG
9, L0' G16' %2 M07G 7%0FL; M 7M0%! 227/ L79M0L0G' 4L7' ' %%L F ?^N

+ / &&+ * /

/ 4 >9B00. 8?9> 008. 08&? > + > ?0 > . 8?9>?. >8 B >
)>9B 9? + > B9 4 \$ 9 >&)B > B ?&+)>08 D +?&+ >
&#+. 9?& >+ >?8 ?* +?> . 8?94 9=0\$G&&+9>)&#>E &\$>?&
\$)?&> ?9> >\$8>. + &&+ >E >)9. >B00. 8?*& >8 9 8 \$
. +> &?&+ >89> B9 9>+ >?8 ?* +?4

27!' L: 88(# L0 G %0! M%L,9FL L6' %2 516 9%5L G9; ; 9G%L0L0'
! F26 27 53PG1' L; ; F9 ! 0L,9! PG%L97L27MP2 M07L 7%L27! F' F M07L0L0'
; F9 56 L9, L%FP/ L PG 2 0' L6' %2 516 9%5L, 09F %L TL L,9! PG G97
%2 M07L G0' LP7% F527/ L; M09; 0TC09/ TL9, L0' L; F9 56 2 L,9P7%L0 M
NF M 6' 7M 7%L; F Q 7M07L F L 901,, ! M0LR TGM0L 96 M00' L%FP/ L PG
' ; 2% 6 2 2 L7MP2 M07L 7%L27! F' F M07L F L S' 7GQL 7%L2 5197516 2726 5
F G5VL L 97! 5%L0 NF M 6' 7M 7%6 900, L 5; F Q 7M07# F L G 7M 5
M0L F %2 M7/ L%FP/ L PGL27L9PFL0! 2M7L 0' L 955/ ' L0 G %0! M%L,9FL
%Q 59; 6' 7M9, LNF M 6' 7M P2% 57' G

A4 >B00. 8?> > . * 08 \$ +980]TJ 0.4214 0 Td [<1D>5]TJ 0.51442 0 Td [(\$)5]TJ 0]TJ 0.42

"4 \$ > >9B00. 8?9>? \$ > 9?)8\$* +?>. > >+ ?&+)> 8 9 880?&+
8B#> .+&. 8&#> 8. #8 * >1 24 +?8>9B \$> >08. #8 * >80
& 0) * +? > >9B00. 8?9> . 8?9>. >9? + 8 &H >9? ? > 9
? \$. B#\$> ? \$ > 8)> ?&+)>))> \$ B) 9> 8 9 880?&+
) ?8. +&> 0. 8?&#>1 2>08. #8 * 4 8 9 8& 89> + >
80 +9 89>0\$. B) > \$ (> 9>8>? \$ 88. E+> + > &# \$. 8&#
9? ? 9>1 9>0 8* &? 2>08& 8>?. >E 88&#>. 8> 8)&#>08 9 880?&+9>. 8
* & ?&+9>. +? 538. 04TD[416> G[IT?0. D58655 0%T[E.(10)4TJ0. 024499 0T6[<1066]J

0' 11 ;

O' L L#27L 7L',,9FV0L 96 MV' LB F209, L6 2PG# PG# %82 M7#
 9Q P9G# 7%L% MC, F96 L' SM7% %f 5 GL 7% 597/ 1 ! M7/ L< K ±9; 22%
 7 5' Q GF !' 7MIL7 FF9R' %M' 2L2%2 M%PG L0L0' L6 7 / ' 6' 7M9, L; 2'
 GQ F L' 79P/ 0L0LF @2F L% 27L F9P7% M' 1! 5! 4# 597/ 1MF6 L9; 22M7 N6 ' 7M
 7% 9FR02 0L5MF7 M0M7 N6 ' 7M9; 27GF L27 % @ M? O' L IF / P5 MG
 %P/ L 96 ; 72 G79M 572 2 27G 7% M' 2L; F GF2 27/ #G L0209' G79M, F902 2M
 ; 0TG 2 27L3% 6' 7M27L; F GF2 27/ L% ! 297GL M%9' G; F902 2M9,, 15 ' 5
 ; F96 9M7L0 M2G27 ; ; F9; F2 ML/ 2Q 7L PFF 7M Q% 7! ' L 7% M6 TL ' L
 ' 7! 9PF / 27/ L9Q F, F GF2 27/ 2

O' F 10 G 59L ' ' 7L 97M9Q FG L9Q F, P7% 27/ L9, L% P! M7 5L',,9FV0L F9P7%
 ; 27L6 7 / ' 6' 7M TL2% P0M7L 7% 574G ' NR' ' 7L2% P0M7L 7%; 27L/ F9P; G
 L QFG GM 506 ' 7M9, L Q% 27L 27 3 0 Td [(')6] TJ 0.454J 0.22773 0 Td [(9)6] TJ 0] TJ 0.383 0 Td [-

FP/LM027/LI 7LI90M; M 7M6P; LM0LGQ F 50P7%F %L%95 FG,9FL' !0
' ; 29%#L7%L96 ' LM0MGF @P L6 P52 5IF 7%96 LM0GL IT' FL 0' GL9006 T
79M' !L9QF %L TL2GF 7!' #C7!' LM' TLF L79M' 7' F 5TL97G%F %6' %2 5T
7!' GF?V 0' LI9009,L6 7%MFTL%FP/LM027/LI 7LMPG 'L S' 7GQL9F
; M 7M67%L; 9G2 5TL9FM' IP7!96 ; '7GM%L; 0TG 27GR09L9P%FM' 6 ? 0' 7
%FP/LM027/L26 7%M%L TL5/ 5L PM09F22 GLO' 50L2GF FG9FL/9QF76' 7M
; F9/F 6 GLO' LI9009,LM' LM00G9P5%L 'L 9F7' L TLM M PM09F2M?

02F!96 6' 7%M07L2,9! PG%97LM' LG' !22LGNP M07LR0' 7LFFZ' LM027/
<9FL9M' FL,9F6 G9,L6 9720FZ/ +26 7%M%L TL LM02P%L; FM#F M' FM 7L
GNP M07L2LR02 0L; 0TG 27L2! 5P% G6 9720FZ/ LR20L97G7M L G; FV9,L7
9QF 5M7 N6' 7M,57L%Q5; '%L016' 'MM' L'Q5P M%17' '%09,L/L 2Q7L; M 7M

, 4 >8 . * * + 9>\$ >. +9& 8 ?& +> >0 ?& +?08. D& 8>8 ?* +?
#8 * +?9> ?E +>0\$G&& +9> + >0 ?& +?9> 9> >?. .)>. 8>\$
?8 ?* +?> >0 &+4

0' LPG19,L; M 7M, F9Q%F; 27M7 N6' 7M/F' 6' 7M# 59IF, 'FF %L012
M' L5MF NPF L G3, 27L6 7 / '6' 7M/F' 6' 7M09; 22M7 N6' 7M/F' 6' 7M#
7%L; 27L6' %2 M07L! 97M! MLO QL' !96' LI96 6 97L2LM' L,2 5L9,L; 27L
6 7 2Td [(7)-15]1-9]TJ 0.39771 0 Td [<1B>-9]TJ 0.457[(7)-15]1-93972469 0 Td [(9)5]TJ 0.53168 0

/14 >8 . * * + 9>? \$ >0 99 # > . >) #8) ?& +> G))! | >9? ? 9
0 8* &?&#>\$ >) ?8. +&>08 9 88?& +> >))9 \$ B) >. +?8.))
9B 9? + 94

0'

0

' / 2727 / LR20L0' L ' %2 F L 9% F2J M7L ! M9,LOWN#L0' L, ' % F 5
/ 9Q F76 ' 7M F9Q% %P ; ; 9FM,9FM' L' 7' F 5% Q 9; 6 ' 7M, L7L 1; F GF2 2/
2, F GMP! MP L7% L 7! 9PF / ' %26 ; 5 6 ' 7MM719, L02M! 0799/ TL,9F797! 971
M95 %16 ' %2 M7G L7L! 97M G4M' L L O G ' ' 7L; F902 2M% L TM' L
P7MIF ! ' 7M7L O' L L 97M7% %M M G IF P5M, LM' L2! F G%52! 5099%
9, L PGL 7% %2 Q FG97L9, L! 97M95 %LP GM7! ' G.T%9027045700628307611991611100592468DOT0

"#."*"/

: 1 FGF2 M7L 27L '52 QFL PG1 1: O: :-# '!LO/: :IEEE4# .4# D= 99 ?H , I =
! ; @/4

Q '7MF,9FL 2G GL 97N95L 727M7M07 5L FP/L 929727/1271M' L 72M%L MMGLP5TLOV: V?
EEE4 #. D\$. * + 8 8 ?&+)9 ?G=0 =0. 8. +%89B %8& 4

N 9G 7/'5G 2'GL FQ7M 5L ' MGF96 L FP/GE 9MFL '025G 7%L 2' F6 GLP5TLOV#
Ov: 096 0 Td [(L)-13]TJ4(5)]TJ 0.2Td [(:]TJ 0.5188 0 T [(L)-13]TJ 0.27173 0 Td [()]TJ 0.96289 0 Td [(9)]TJ 0.536

OL 25L 1 LF;9FVL 2597G7LF P%#2/P/L PGL 5/ G ' %2 2+ L L
' ;M6 ' FN#LOV8?

QL 1 ' %2 2%L F P% 7% PGL ' 5 M% 10L 97M95 % P G7!' G %7M2 %2L ' 5!M%
MMGL 1V818-1L';NOV81EEE# . 4#. D= 99 ?=@I =A, "; /14

OL 1 ' %2 2%L F P% 7% PGL ' 5 M% 10L 97M95 % P G7!' G %7M2 %2L ' 5!M%
MMGL 1V818-1L';NOV81EEE# . 4#. D= 99 ?=@I =A, "; /14

OL 2GL 6 25L 9P7%M7L F GF2 E8 @8j9 B)Y(T)E#09569T0/F#0[(41D>]TJ 0.5188 0 Td [(?)TJ 0.36987 0 Td

.QL 2 FP/L,'ML7,9F6 M07L9FL' 50! FL F9,'G27 53EEEE4 #.D= 8B#9= 8B# ?G=
.9? 8(? 8B# ?G+.8* ?&+.8 ?&+?9+ 8.D& 89= 8B# ?G+.8* ?&+.8
?S 8 8. 99&+)9= B)?4\$?
.NL L 'RG' 5 G#P51810V:O1EEEE4 #.D= E9 D+?9= E98. * =
8 99 ++. B+ * +?9=B * @I ;14\$?
..LL L7% F2I '%2 ,L ;221 FGF2 Z/ 2LP7' L-#OV: N1EEEE4 0.+)& 4 8#= B ?&+C
8 8?&& ?& += * =9 C 0&& C08 9 8&& \$?
.-LL 2 '%2 2%L FP%L7%L PGL' 5M%1M0L 97M95%L P G17!' G%7M2%2L' 5!M%
MMGL 1V818-1L'; N0V81EEEE# .#.D= 99 ?9=@I=A, "/14
.JLL 2 '%2 2%L FP%L7%L PGL' 5M%1M0L 97M95%L P G17!' G%7M2%2L' 5!M%
MMGL 1V818-1L'; N0V81EEEE# .#.D= 99 ?9=@I=A, "/14
.ILL 2 '%F5L' /2MFL 9!4' M1 92 1Q (# L::11 J: ?
.(LL 2 9M1 FP/G1EEEE4 8D 89&+4B9 .'#.D= 8B#C 80.9)=? ((= & F4\$*)
.8LL '; F06' 7M9,LPG0' HL FP/L 7,9F' 6' 7M1 %6 2720F M07HL Z3 9G49,L 97M95%L P G17!' G
EEEE#0. #.D= 99=0 (#= %A/ A%A%A/ =0 =A/ A% @ <, , 4 >
-VLL P00FL 2 2' !M0F# '%2 FL FP/L' 7', 2M7%L L ML F9P; # '7MFG,9FL '%2 FL7%
'%2 2%L' FQ' G ; ;'7%2S # 7 5TG9,L 9F,02' L @P2 57M 9GL< =271M' L '%2 F
FV L F9/F6 # 'M1M1M0L 5L FV L; 97GFGL P; ;56' 7M3 P2%7!' L' 5M%1M0L6 ; F9Q7/
FP/L M0U M07L' QRL 97M95%L FV 2JL'; 10V: O1EEEE4* 9#.D= & 8 = 8 9 80?&+%
8B#% .D 8 # = 8 9 80?&+ 8B# .D .+?8 = .E+). 9= B00) * +?.)
B& +) ? %2. * 08. D&# .+?8.) 944 9 9GL%L 5 00DSh`Sh`DSh`N°

JCL : (IML '7' F 5 9PVD, L 96 6 97R' 50L, L G!0PGMB ' G27L RCL 0 ; MRO . "L
7L !M ' 5M L F GF, 207L FP/L 207# PGL

(JLL 6' F2 7L 95/' L9,L 0TQ 27G- 6' F2 7L 9! 2M9,L7MF7 5L '%27' 1.5/ 5L FP/L PG
7% 107 5L FP/L PGL 952 T# !M 88(1

(ILL 7T%FL L9FM' L 6' F2 7L 95/' L9,L 0TQ 27G M2 G L F9,' G27 50 L7% P6 7L 2 0MG
96 6 2M' 1 6' F2 7L 95/' L9,L 0TQ 27G M2 G 7P 5L 2M L %207L 77L7MF7L '%
O: CH-J" N: V. 1EEE4 0. +)& 4 8#-8B++&#C08 ?& = ?&9* +B)* +B)<\$ \$G8d (88) (88) 8, 9, 38 (88)

