

6DIHW\ &RPPLWWHH 0HHWLQJ
:HGQHVGD\ 0DUFK
%RDUG 5RRP

0HPEHUV SUHVHQW ~~6W8DQ\)~~ %RQDWR & BQQDFD DNDNBOU 3DW
0RUULVRQ 7HUHVD 3HWHUV 0DULD6KDQDN]RU-HCKDLZG U6 H6WHL
-DPHV 9LDWRU DQG 6WHSKDQLH :DPVOH\
*XHVW \$DURQ 5DPVH\ IURP (GZDUGV 5LVN 0DQDJHPPHQW

1DWKdq)U\PD ~~PHFVDDQJ~~ WWRHGHU DW 30

7KH PLQXWHV IURP WPHH ~~HQDQD~~ ZHWHRGW KWUJRXVSH 6WHSKDQ
:DPVOH\ PDGH D PRWHRQL ~~Q~~ RWHS/S URK ~~HE~~ RQGGHUG VHKHWIRWLRQ

1DWKdq KDG HYHU\RQH LQWURGXFH WKHPVHOYHV

1DWKdq UHYLHZHG ~~FWKHFQDQ~~ DUAH'SR ~~WW~~ ZHWK WKH FRP
)DFLOLWLHV 0DQD ~~J~~ ~~GMHQWH~~ & XVDGR ~~Q~~ ~~R~~ ~~FOVZIRP~~ ~~P~~ ~~RLQW~~ ~~KH~~ ~~O~~
)DFLOLWLHV 0DQ ~~Q~~ ~~IFHP~~ ~~H~~ ~~Q~~ ~~MX~~ ~~U~~ ~~D~~ ~~H~~ ~~Q~~ ~~W~~ ~~K~~ ~~D~~ ~~Q~~ ~~R~~ ~~Q~~ ~~Q~~ ~~M~~ ~~X~~ ~~U~~ ~~L~~ ~~H~~ ~~V~~ ~~W~~ ~~K~~ ~~X~~ ~~V~~
&KLOG 1XWULWLHRQ IRDQ- ~~Q~~ ~~R~~ ~~X~~ ~~I~~ ~~D~~ ~~Q~~ ~~M~~ ~~X~~ ~~U~~
7UDQVSRUWDWLRQ ~~K~~ ~~D~~ ~~G~~ ~~X~~ ~~Q~~ ~~B~~ \LQM ~~X~~ ~~U~~ ~~D~~ ~~H~~ ~~Q~~ ~~W~~ ~~K~~ ~~D~~ ~~Q~~ ~~R~~ ~~Q~~ ~~Q~~ ~~M~~ ~~X~~ ~~U~~ ~~L~~ ~~H~~ ~~V~~ ~~W~~ ~~K~~ ~~X~~ ~~V~~
HDUOLH ~~FK~~ ~~R~~ ~~V~~ ~~K~~ ~~Q~~ ~~X~~ ~~H~~ ~~D~~ ~~U~~
3URIHVVLRRQDO LQM ~~X~~ ~~U~~ ~~H~~ ~~R~~ ~~I~~ ~~K~~ ~~D~~ ~~G~~ ~~X~~ ~~Q~~ ~~B~~ \LQM ~~X~~ ~~U~~ ~~D~~ ~~H~~ ~~Q~~ ~~W~~ ~~K~~ ~~D~~ ~~Q~~ ~~R~~ ~~Q~~ ~~Q~~ ~~M~~ ~~X~~ ~~U~~ ~~L~~ ~~H~~ ~~V~~ ~~W~~ ~~K~~ ~~X~~ ~~V~~

1DWKdq UHYLHZHG ~~WKSRUWH~~ ZUWFO ~~D~~ ~~L~~ ~~N~~ ~~P~~ ~~H~~ ~~U~~ ~~F~~ ~~R~~ ~~R~~ ~~P~~ ~~S~~ ~~W~~ ~~F~~ ~~O~~ ~~H~~ ~~L~~ ~~P~~ : ~~R~~ ~~L~~ ~~V~~ ~~W~~
VKRZV KLJK WKLWR ~~H~~ ~~Q~~ ~~D~~ ~~W~~ ~~R~~ ~~Q~~ ~~V~~ ~~F~~ ~~R~~ ~~P~~ ~~S~~ ~~S~~ ~~H~~ ~~U~~ ~~H~~ ~~R~~ ~~R~~ ~~V~~ ~~N~~ ~~H~~ ~~Z~~ ~~R~~ ~~&~~ ~~R~~ ~~D~~ ~~S~~ ~~V~~ ~~L~~ ~~Q~~ ~~F~~ ~~X~~ ~~U~~ ~~U~~ ~~H~~
VOLJKWO\ OHVV ~~FK~~ ~~D~~ ~~Q~~ ~~L~~ ~~L~~ ~~Q~~ ~~H~~ ~~U~~ ~~W~~ ~~K~~ ~~D~~ ~~Q~~

6KDUD\ %R\QWRQ UHWR ~~U~~ ~~Q~~ ~~V~~ ~~H~~ ~~Q~~ ~~W~~ ~~R~~ ~~Q~~ ~~Y~~ ~~M~~ ~~K~~ ~~S~~ ~~H~~ ~~G~~ ~~B~~ ~~H~~ ~~U~~ ~~D~~ ~~O~~ ~~P~~ ~~H~~ ~~P~~ ~~H~~ ~~R~~ ~~O~~ ~~W~~ ~~X~~ ~~U~~ ~~\~~ ~~D~~ ~~Q~~ ~~G~~
(+DUGHDPQ ZRQ ~~W~~ ~~&~~ ~~K~~ ~~L~~ ~~G~~ ~~N~~ ~~D~~ ~~Z~~ ~~I~~ ~~Q~~ ~~I~~ ~~R~~ ~~S~~ ~~W~~ ~~E~~ ~~D~~ ~~F~~ ~~D~~ ~~N~~ ~~S~~ ~~X~~ ~~V~~ ~~W~~ ~~V~~ ~~%~~ ~~B~~ ~~G~~ ~~Q~~ ~~R~~ ~~V~~ ~~C~~
RU IDOO LQM ~~X~~ ~~U~~ ~~L~~ ~~H~~ ~~V~~ ~~W~~ ~~K~~ ~~X~~ ~~V~~ ~~H~~ ~~I~~ ~~R~~ ~~W~~ ~~X~~ ~~D~~ ~~U~~ ~~X~~ ~~D~~ ~~I~~ ~~U~~ ~~X~~ ~~H~~ ~~D~~ ~~E~~ ~~Q~~ ~~B~~ ~~X~~ ~~W~~ ~~O~~ ~~H~~ ~~O~~ ~~S~~ ~~G~~ ~~H~~ ~~B~~ ~~O~~ ~~L~~ ~~S~~ ~~Q~~ ~~M~~ ~~X~~ ~~U~~ ~~L~~ ~~H~~ ~~V~~ ~~W~~ ~~K~~ ~~X~~ ~~V~~
7KH QH[W GUDZLQS ~~V~~ ~~I~~ ~~R~~ ~~Q~~ ~~G~~ ~~R~~ ~~D~~ ~~O~~ ~~O~~ ~~L~~ ~~S~~ ~~Z~~ ~~N~~ ~~W~~ ~~U~~ ~~B~~ ~~I~~ ~~H~~ ~~G~~ ~~L~~ ~~Z~~ ~~Q~~ ~~O~~ ~~O~~ ~~\~~ ~~E~~ ~~H~~
,Q VSULQJ ZLQQLQJ FDP SXVHVD ~~N~~ ~~I~~ ~~D~~ ~~O~~ ~~W~~ ~~E~~ ~~H~~ ~~R~~ ~~S~~ ~~U~~ ~~R~~ ~~O~~ ~~Q~~ ~~G~~ ~~H~~ ~~P~~ ~~S~~ ~~O~~ ~~R~~ ~~F~~ ~~I~~
,Q IDOO D GUDZLQRJUZD ~~O~~ ~~F~~ ~~O~~ ~~F~~ ~~E~~ ~~S~~ ~~X~~ ~~K~~ ~~H~~ ~~Z~~ ~~L~~ ~~W~~ ~~R~~ ~~K~~ ~~H~~ ~~O~~ ~~R~~ ~~U~~ ~~Q~~ ~~Q~~ ~~M~~ ~~X~~ ~~U~~ ~~H~~ ~~H~~ ~~O~~ ~~X~~ ~~Q~~ ~~F~~
VDIHW\ WRNHQ ~~U~~ ~~W~~ ~~R~~ ~~Q~~ ~~W~~ ~~X~~ ~~U~~ ~~L~~ ~~H~~ ~~V~~ ~~W~~ ~~K~~ ~~X~~ ~~V~~ ~~H~~ ~~I~~ ~~R~~ ~~W~~ ~~X~~ ~~D~~ ~~U~~ ~~X~~ ~~H~~ ~~D~~ ~~E~~ ~~Q~~ ~~B~~ ~~X~~ ~~W~~ ~~O~~ ~~H~~ ~~O~~ ~~S~~ ~~G~~ ~~H~~ ~~B~~ ~~O~~ ~~L~~ ~~S~~ ~~Q~~ ~~M~~ ~~X~~ ~~U~~ ~~L~~ ~~H~~ ~~V~~ ~~W~~ ~~K~~ ~~X~~ ~~V~~

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FDQ DXWKRUL]H ~~W~~ ~~R~~ ~~H~~ ~~G~~ ~~B~~ ~~W~~ ~~K~~ ~~I~~ ~~H~~ ~~W~~ ~~Q~~ ~~W~~ ~~O~~ ~~H~~ ~~F~~ ~~H~~ ~~R~~ ~~G~~ ~~R~~ ~~Q~~ ~~H~~ ~~E~~ ~~H~~ ~~V~~ ~~H~~ ~~Q~~ ~~Z~~ ~~I~~ ~~X~~ ~~D~~ ~~O~~ ~~O~~ ~~\~~
\$Q H[SODQDWLRQ ~~R~~ ~~G~~ ~~H~~ ~~Z~~ ~~K~~ ~~W~~ ~~L~~ ~~Z~~ ~~H~~ ~~U~~ ~~L~~ ~~K~~ ~~R~~ ~~X~~ ~~O~~ ~~T~~ ~~O~~ ~~D~~ ~~H~~ ~~S~~ ~~X~~ ~~S~~ ~~S~~ ~~O~~ ~~V~~ ~~L~~ ~~O~~ ~~H~~ ~~R~~ ~~G~~ ~~D~~ ~~I~~ ~~D~~ ~~F~~ ~~L~~ ~~O~~ ~~L~~
LQVSHFWLRQ ZDV ~~Q~~ ~~H~~ ~~S~~ ~~L~~ ~~O~~ ~~V~~ ~~L~~ ~~Q~~ ~~R~~ ~~H~~ ~~G~~ ~~V~~ ~~E~~ ~~H~~ ~~H~~ ~~A~~ ~~N~~ ~~U~~ ~~Q~~ ~~V~~ ~~S~~ ~~H~~ ~~Z~~ ~~M~~ ~~G~~ ~~R~~ ~~Q~~ ~~Z~~

6DIHW\ \$ZDUHQHVV DFWLYLWLHV ZHUH UHYLHZHG E\ WKH F

\$DURQ 5DPVH\ IURP ~~D~~ ~~Q~~ ~~Z~~ ~~D~~ ~~H~~ ~~E~~ ~~M~~ ~~G~~ ~~S~~ ~~V~~ ~~S~~ ~~U~~ ~~H~~ ~~V~~ ~~H~~ ~~Q~~ ~~W~~ ~~R~~ ~~I~~ ~~G~~ ~~W~~ ~~K~~ ~~K~~ ~~H~~ ~~L~~ ~~U~~ ~~K~~ ~~W~~ ~~K~~ ~~I~~ ~~O~~ ~~L~~ ~~G~~
7KH :HOOQHVV SURJ ~~O~~ ~~V~~ ~~I~~ ~~P~~ ~~J~~ ~~K~~ ~~W~~ ~~Q~~ ~~H~~ ~~W~~ ~~F~~ ~~O~~ ~~R~~ ~~K~~ ~~O~~ ~~G~~ ~~W~~ ~~Z~~ ~~H~~ ~~H~~ ~~N~~ ~~R~~ ~~I~~ ~~L~~ ~~Y~~ ~~H~~

