

Frequently Asked Questions

Question

SMART @ 0 A H 8 D @ > 2 : 0

Answer

0 6 4 K 9 0 B @ 8 1 C B S.M.A.R.T. 8 < 5 5 B = 5 A : > ; L : > ? > ; 5 9. 0 6 4 > 5
? > ; 5 > B = > A 8 B A O : > ? @ 5 4 5 ; Q = = > < C : ; 0 A A C 8 7 A ; 5 4 C N I 8 E : I D,
Value, Worst, Threshold 8 RAW. 0 A A < > B @ 8 < : 0 6 4 K 9 8 7 : ; 0 A A > 2.

ID (< > 6 5 B B 0 : 6 5 8 < 5 = > 2 0 B L A O Number) 8 4 5 = B 8 D 8 : 0 B > @, = > < 5 @
0 B @ 8 1 C B 0 2 B 5 E = > ; > 3 8 8 S.M.A.R.T. 0 7 2 0 = 8 5 > 4 = > 3 > 8 B > 3 > 6 5
0 B @ 8 1 C B 0 ? @ > 3 @ 0 < < 0 < 8 < > 6 5 B 2 K 4 0 2 0 B L A O ? > - @ 0 7 = > < C, 0
2 > B 8 4 5 = B 8 D 8 : 0 B > @ 2 A 5 3 4 0 > 4 = > 7 = 0 G = > > ? @ 5 4 5 ; O 5 B
0 B @ 8 1 C B. A > 1 5 = = > M B > ? > ; 5 7 = > 2 A ; C G 0 5 ? @ > 3 @ 0 < ,
: > B > @ K 5 ? 5 @ 5 2 > 4 O B > 1 1 5 ? @ 8 = O B > 5 = 0 7 2 0 = 8 5 0 B @ 8 1 C B 0 A
0 = 3 ; 8 9 A : > 3 > O 7 K : 0 = 0 @ C A A : 8 9. = > 3 4 0 ? > ; C G 0 5 B A O B 0 : 0 O
1 5 ; 8 1 5 @ 4 0, G B > ? > = O B L, G B > 6 5 M B > 7 0 ? 0 @ 0 < 5 B @, < > 6 = >
B > ; L : > ? > 5 3 > 8 4 5 = B 8 D 8 : 0 B > @ C.

Value (Current) B 5 : C I 5 5 7 = 0 G 5 = 8 5 0 B @ 8 1 C B 0 2 ? > ? C 3 0 O E (B. 5. 2
2 5 ; 8 G 8 = 0 E = 5 8 7 2 5 A B = > 9 @ 0 7 < 5 @ = > A B 8). ? @ > F 5 A A 5 @ 0 1 > B K
2 8 = G 5 A B 5 @ 0 > = > < > 6 5 B C < 5 = L H 0 B L A O, C 2 5 ; 8 G 8 2 0 B L A O 8
> A B 0 2 0 B L A O = 5 8 7 < 5 = = K < . > ? > : 0 7 0 B 5 ; N Value = 5 ; L 7 O
A C 4 8 B L > « 7 4 > @ > 2 L 5 » 0 B @ 8 1 C B 0, = 5 A @ 0 2 = 8 2 0 O 5 3 > A >
7 = 0 G 5 = 8 5 < Threshold M B > 3 > 6 5 0 B @ 8 1 C B 0. 0 : ? @ 0 2 8 ; >, G 5 <
< 5 = L H 5 Value, B 5 < E C 6 5 A > A B > O = 8 5 0 B @ 8 1 C B 0 (8 7 = 0 G 0 ; L = >
2 A 5 : ; 0 A A K 7 = 0 G 5 = 8 9, : @ > < 5 RAW, = 0 = > 2 > < 4 8 A : 5 8 < 5 N B
< 0 : A 8 < 0 ; L = > 5 8 7 2 > 7 < > 6 = K E 7 = 0 G 5 = 8 5, = 0 ? @ 8 < 5 @ 1 0 0).

Worst = 0 8 E C 4 H 5 5 7 = 0 G 5 = 8 5, : > B > @ > 3 > 4 > A B 8 3 0 ; >
7 = 0 G 5 = 8 5 Value 7 0 2 A N 6 8 7 = L 2 8 = G 5 A B 5 @ 0. 7 < 5 @ O 5 B A O B > 6 5 2
« ? > ? C 3 0 O E ». ? @ > F 5 A A 5 @ 0 1 > B K > = > < > 6 5 B C < 5 = L H 0 B L A O
; 8 1 > > A B 0 2 0 B L A O = 5 8 7 < 5 = = K < . > = 5 < C B > 6 5 = 5 ; L 7 O
> 4 = > 7 = 0 G = > A C 4 8 B L > 7 4 > @ > 2 L 5 0 B @ 8 1 C B 0, = C 6 = >
A @ 0 2 = 8 2 0 B L 5 3 > A Threshold.

Threshold 7 = 0 G 5 = 8 5 2 « ? > ? C 3 0 O E », : > B > @ > 3 > 4 > ; 6 5 =
4 > A B 8 3 = C B L Value M B > 3 > 6 5 0 B @ 8 1 C B 0, G B > 1 K A > A B > O = 8 5
0 B @ 8 1 C B 0 1 K ; > ? @ 8 7 = 0 = > : @ 8 B 8 G 5 A : 8 < . @ > I 5 3 > 2 > @ O, Threshold
M B > ? > @ > 3 : 5 A ; 8 Value 1 > ; L H 5 Threshold 0 B @ 8 1 C B 2 ? > @ O 4 : 5 ; 5 A ; 8
< 5 = L H 5 ; 8 1 > @ 0 2 5 = A 0 B @ 8 1 C B > < ? @ > 1 ; 5 < K. < 5 = = > ? >
B 0 : > < C : @ 8 B 5 @ 8 N C B 8 ; 8 B K, G 8 B 0 N I 8 5 S.M.A.R.T., 2 K 4 0 N B > B G Q B >
A > A B > O = 8 8 4 8 A : 0 ; 8 1 > > B 4 5 ; L = > 3 > 0 B @ 8 1 C B 0 2 @ > 4 5 « Good »
8 ; 8 « Bad ». @ 8 M B > < > = 8 = 5 C G 8 B K 2 0 N B, G B > 4 0 6 5 ? @ 8 Value,
1 > ; L H 5 < Threshold, 4 8 A : = 0 A 0 < > < 4 5 ; 5 C 6 5 < > 6 5 B 1 K B L
C < 8 @ 0 N I 8 < A B > G : 8 7 @ 5 = 8 O ? > ; L 7 > 2 0 B 5 ; O, 0 B > 8 2 > 2 A 5
E > 4 O G 8 < < 5 @ B 2 5 F > <, ? > M B > < C ? @ 8 > F 5 = : 5 7 4 > @ > 2 L O

48A:0 A<>B@5BL AB>8B 2AQ-B0:8 =0 4@C3>9 ::0AA 0B@81CB0, 0
8<5==> RAW. 4=0:> 8<5==> 7=0G5=85 Value, >?CAB82H55AO
=865 Threshold, <>65B AB0BL ;538B8<=K< ?>2>4>< 4;O 70<5=K
48A:0 ?> 30@0=B88(4;O A0<8E 30@0=B89I8:>2, :>=5G=> 65)
:B> 65 OA=55 A:065B > 74>@>2L5 48A:0, :0: =5 >= A0<,
45<>=AB@8@CO B5:CI55 7=0G5=85 0B@81CB0 EC65
:@8B8G5A:>3> ?>@>30? ". 5. ? @8 7=0G5=88 Value, 1>; LH5<
Threshold, A0< 48A: AG8B05B, GB> 0B@81CB 74>@>2, 0 ? @8 <5=LH5<
;81> @02=>< GB> 1>;5=. G5284=>, GB> ? @8 Threshold=0
A>AB>O=85 0B@81CB0 =5 1C45B ? @87=0=> :@8B8G5A:8<
=8:>340. Threshold ?>AB>O==K9 ?0@0<5B@, 70H8BK9
?@>872>48B5;5< 2 48A:5.

RAW (Data) A0<K9 8=B5@5A=K9, 206=K9 8 =C6=K9 4;O >F5=:8
?>:070B5;L. 1>;LH8=AB25 A;CG052 >= A>45@68B 2 A515
=5 «?>?C308», 0 @50;L=K5 7=0G5=8O, 2K@0605<K5 2
@07;8G=KE 548=8F0E 87<5@5=8O, =0?@O<CN 3>2>@OI85 >
B5:CI5< A>AB>O=88 48A:0. A=>2K20OAL 8<5==> =0 MB><
?>:070B5;5, D>@<8@C5BAO 7=0G5=85 Value (0 2>B ?> :0:><C
0;3>@8B<C >=> D>@<8@C5BAO MB> C65 B09=0
?@>872>48B5;O, ?>:@KB0O <@0:><). <5==> C<5=85 G8B0BL
8 0=0;878@>20BL ?>;5RAW 40QB 2>7<>6=>ABL >1J5:B82=>
>F5=8BL A>AB>O=85 28=G5AB5@0.

-B8< <K A59G0A 8 709<Q<AO @0715@Q< 2A5 =081>;55
8A?>;L7C5<K5 0B@81CBKS.M.A.R.T., ?>A<>B@8<, > GQ< >=8
3>2>@OB 8 GB> =C6=> 45;0BL, 5A;8 >=8 =5 2 ?>@O4:5.

5@54 B5< :0: >?8AK20BL 0B@81CBK 8 4>?CAB8<K5 7=0G5=8O
8E ?>;ORAW, CB>G=N, GB> 0B@81CBK <>3CB 8<5BL ?>;5RAW
@07=>3> B8?0: B5:CI55 8=0:0?;820NI55. "5:CI55 ?>;5
A>45@68B 7=0G5=85 0B@81CB0 2 =0AB>OI89 <><5=B, 4;O
=53> A2>9AB25==> ?5@8>48G5A:>5 87<5=5=85(4;O >4=8E
0B@81CB>2 87@54:0, 4;O 4@C38E <=>3> @07 70 A5:C=4C;
4@C3>5 45;>, GB> 2 ?@>3@0<<0E GB5=8OS.M.A.R.T. B0:>5
1KAB@>5 87<5=5=85 =5 >B>1@0605BAO). 0:0?;820NI55
?>;5 A>45@68B AB0B8AB8:C, >1KG=> 2 =Q< A>45@68BAO
:>;8G5AB2> 2>7=8:=>25=89 :>=: @5B=>3> A>1KB8O A>
2@5<5=8 ?5@2>3> 70?CA:0 48A:0.
"5:CI89 B8? E0@0:B5@5= 4;O 0B@81CB>2, 4;O :>B>@KE =5B
A<KA;0 AC<<8@>20BL 8E ?@54K4CI85 ?>:070=8O. 0?@8<5@,
?>:070B5;L B5<?5@0BC@K 48A:0 O2;O5BAO B5:CI8<: 53>
F5;L 2 45<>=AB@0F88 B5<?5@0BC@K 2 =0AB>OI89 <><5=B,
0 =5 AC<<K 2A5E ?@54K4CI8E B5<?5@0BC@. 0:0?;820NI89
B8? A2>9AB25=5= 0B@81CB0<, 4;O :>B>@KE 25AL 8E A<KA;
70::NG05BAO 2 ?@54>AB02;5=88 8=D>@<0F88 70 25AL
?5@8>4 «687=8» 28=G5AB5@0. 0?@8<5@, 0B@81CB,
E0@0:B5@87CNI89 2@5<O @01>BK 48A:0, O2;O5BAO

=0:0?;820N18<, B. 5. A>45@68B :>;8G5AB2> 548=8F
2@5<5=8, >B@01>B0==KE=0:>?8B5;5<702AN53>8AB>@8N.

@8ABC?8<: @0AA<>B@5=8N0B@81CB>288ERAW-?>;59.

B @ 8 1 C B: 01 Raw Read Error Rate

"8? B5:CI89, <>65B1KBL=0:0?;820N18<4;OWD8AB0@KEHitachi
?8A0=85A>45@68BGOAB>BC2>7=8:=>25=8O>H81>: ?@8
GB5=88A?;0AB8=
;O2A5E48A:>2Seagate, Samsung (=0G8=0O A A5<59AB20SpinPoint F1
(2::NG8B5;L=>)) 8Fujitsu 2,53 E0@0:B5@=K>3@>=<K5G8A;02
MB8E?>;OE.
;O>AB0;L=KE48A:>2Samsung82A5E48A:>2WD2MB><?>;5
E0@0:B5@5=0.
;O48A:>2Hitachi2MB><?>;5E0@0:B5@5=0;81>
?5@8>48G5A:>587<5=5=85?>;O2?@545;0E>B04>
=5A:>;L:8E548=8F.
"0:85>B;8G8O>1CA;>2;5=KB5<, GB>2A56QAB:8548A:8Seagate,
=5:>B>@K5Samsung8FujitsuAG8B0NB7=0G5=8OMB8E?0@0<5B@>2
=5B0:, :0:WD, Hitachi84@C385Samsung. @8@01>B5;N1>3>
28=G5AB5@02A53402>7=8:0NB>H81:8B0:>3> @>40,8>=
?@5>4>;5205B8EA0<>AB>OB5;L=>, MB>=>@<0;L=>,
?@>AB>=048A:0E, :>B>@K52MB><?>;5A>45@60B08;8
=51>;LH>5G8A;>, ?@>872>48B5;L=5AGQ;=C6=K<
C:07K20BL8AB8==>5:>;8G5AB2>MB8E>H81>..
"0:8<>1@07><, =5=C;52>9?0@0<5B@=048A:0EWD8Samsung4>
SpinPoint F1 (=52::NG8B5;L=>)81>;LH>57=0G5=85?0@0<5B@0
=048A:0EHitachi<>3CB C:07K20BL=00??0@0B=K5?@>1;5<K A
48A:><. 5>1E>48<>CG8BK20BL, GB>CB8;8BK<>3CB
>B>1@060BL=5A:>;L:>7=0G5=89, A>45@60I8EAO2?>;5
RAW MB>3>0B@81CB0, :0:>4=>, 8>=>1C45B2K3;O45BL
25AL<01>;LH8<, E>BL MB>81C45B=525@=>
(?>4@>1=>AB8A<. =865).
048A:0ESeagate, Samsung (SpinPoint F18=>255)8Fujitsu=0MB>B0B@81CB
<>6=>=5>1@0I0BL2=8<0=8O.

B @ 8 1 C B: 02 Throughput Performance

"8? B5:CI89
?8A0=85A>45@68B7=0G5=85A@54=59
?@>872>48B5;L=>AB848A:0887<5@O5BAO2:0:8E-B>
«?>?C30OE». 1KG=>53>=5=C;52>57=0G5=85
>B<5G05BAO=028=G5AB5@0EHitachi. 0=8E>=<>65B
87<5=OBLAO?>A;587<5=5=8O?0@0<5B@>2, 0<>65B8
A0<?>A515?>=58725AB=><C0;3>@8B<C
0@0<5B@=540QB=8:0:>98=D>@<0F88?>;L7>20B5;N8=5

3>2>@8B=8>:0:>9>?0A=>AB8?@8;N1><A2>Q<7=0G5=88.

B @ 8 1 C B: 03 Spin-Up Time

"8?B5:CI89

?8A0=85A>45@68B2@5<O,70:>B>@>5H?8=45;L48A:02

?>A;54=89@07@07>3=0;AO87A>AB>O=8O?>:>O4>

=><8=0;L=>9A:>@>AB8.>65BA>45@60BL4207=0G5=8O

?>A;54=558,=0?@8<5@,<8=8<0;L=>52@5<O@0A:@CB:8.

>65B87<5@OBLAO2<8;;8A5:C=40E,45AOB:0E

<8;;8A5:C=48B.?.MB>7028A8B>B?@>872>48B5;O8

<>45;848A:0

@5<O@073>=0<>65B@07;8G0BLAO C @07=KE48A:>2

(?@8GQ<C48A:>2>4=>3>?@>872>48B5;OB>65)2

7028A8<>AB8>BB>:0@0A:@CB:8,<0AAK1;8=>2,

=><8=0;L=>9A:>@>AB8H?8=45;O8B.?

AB0B8,28=G5AB5@KFujitsu2A53408<5NB548=8FC2MB><?>;52

A;CG05>BACBAB28O?@>1;5<A@0A:@CB:>9H?8=45;O.

@0:B8G5A:8=8G53>=53>2>@8B>74>@>2L548A:0,

?>MB><C?@8>F5=:5A>AB>O=8O28=G5AB5@0=0?0@0<5B@

<>6=>=5>1@010BL2=8<0=8O.

B @ 8 1 C B: 04 Number of Spin-Up Times (Start/Stop Count)

"8?=0:0?;820NI89

?8A0=85A>45@68B:>;8G5AB2>@072:;NG5=8O48A:0.K205B

=5=C;52K<=0B>;L:>GB>:C?;5==><48A:5,

=0E>482H5<AO270?0O==>9C?0:>2:5,GB><>65B

3>2>@8BL>B5AB8@>20=8848A:0=0702>45.;85IQ>GQ<-B>,

<=5=58725AB=><

@8>F5=:574>@>2LO=5>1@0109B5=00B@81CB2=8<0=8O.

B @ 8 1 C B: 05 Reallocated Sector Count

"8?=0:0?;820NI89

?8A0=85A>45@68B:>;8G5AB2>A5:B>@>2,

?5@5=07=0G5==KE28=G5AB5@><2@575@2=CN>1;0ABL.

@0:B8G5A:8:;NG52>9?0@0<5B@2>F5=:5A>AB>O=8O.

>OA=8<,GB>2>>1I5B0:>5«?5@5=07=0G5==K9A5:B>@».

>34048A:2?@>F5AA5@01>BK=0BK:05BAO=0

=5G8B05<K9/?;>E>G8B05<K9/=570?8AK205<K9/?;>E>

70?8AK205<K9A5:B>@,>=<>65B?>AG8B0BL53>

=52>A?>;=8<>?>2@564Q==K<.!?5F80;L=>4;OB0:8E

A;CG052?@>872>48B5;L?@54CA<OB@8205B=0:064><48A:5

(=0:0:8E-B><>45;OE2F5=B@5(;>38G5A:><:=F5)

48A:0,=0:0:8E-B>2:=F5:064>3>B@5:08B.4.)

@ 575 @ 2 = CN > 1; 0 ABL. @ 8 = 0; 8 G 8 8 ? > 2 @ 564 Q == > 3 > A 5 : B > @ 0
 48 A : ? > < 5 G 0 5 B 5 3 > : 0 : = 5 G 8 B 0 5 < K 9 8 8 A ? > ; L 7 C 5 B 2 < 5 A B >
 = 5 3 > A 5 : B > @ 2 @ 575 @ 2 = > 9 > 1; 0 A B 8, A 4 5; 0 2
 A > > B 2 5 B A B 2 C N I 8 5 ? > < 5 B : 8 2 A ? 5 F 8 0; L = > < A ? 8 A : 5
 4 5 D 5 : B > 2 ? > 2 5 @ E = > A B 8 G-list. " 0 : 0 O > ? 5 @ 0 F 8 O ? >
 = 0 7 = 0 G 5 = 8 N = > 2 > 3 > A 5 : B > @ 0 = 0 @ > ; L A B 0 @ > 3 >
 = 0 7 K 2 0 5 B A O remap (@ 5 < 0 ?) ; 8 1 > ? 5 @ 5 = 0 7 = 0 G 5 = 8 5, 0
 8 A ? > ; L 7 C 5 < K 9 2 < 5 A B > ? > 2 @ 564 Q == > 3 > A 5 : B > @
 ? 5 @ 5 = 0 7 = 0 G 5 == K < . > 2 K 9 A 5 : B > @ ? > ; C G 0 5 B ; > 3 8 G 5 A : 8 9
 = > < 5 @ L B A A B 0 @ > 3 >, 8 B 5 ? 5 @ L ? @ 8 > 1 @ 0 I 5 = 8 8 : A 5 : B > @ C A
 M B 8 < = > < 5 @ > < (? @ > 3 @ 0 < < K 6 5 = 5 7 = 0 N B = 8 > : 0 : 8 E
 ? 5 @ 5 = 0 7 = 0 G 5 = 8 O E !) 7 0 ? @ > A 1 C 4 5 B ? 5 @ 5 = 0 ? @ 0 2 ; O B L A O 2
 @ 575 @ 2 = CN > 1; 0 ABL.
 " 0 : 8 < > 1 @ 0 7 > <, E > B L A 5 : B > @ 8 2 K H 5; 8 7 A B @ > O, > 1 J Q < 4 8 A : 0
 = 5 8 7 < 5 = O 5 B A O. > = O B = >, G B > = 5 8 7 < 5 = O 5 B A O > = 4 > ? > @ K 4 >
 2 @ 5 < 5 = 8, B. . : > 1 J Q < @ 575 @ 2 = > 9 > 1; 0 A B 8 = 5 1 5 A : > = 5 G 5 =.
 4 = 0 : > @ 575 @ 2 = 0 O > 1; 0 A B L 2 ? > ; = 5 < > 6 5 B A > 4 5 @ 6 0 B L
 = 5 A : > ; L : > B K A O G A 5 : B > @ > 2, 8 4 > ? C A B 8 B L, G B > 1 K > = 0
 7 0 : > = G 8; 0 A L, 1 C 4 5 B 2 5 A L < 0 1 5 7 > B 2 5 B A B 2 5 = > 4 8 A :
 = C 6 = > 1 C 4 5 B 7 0 < 5 = 8 B L 7 0 4 > ; 3 > 4 > M B > 3 >.
 A B 0 B 8, @ 5 < > = B = 8 : 8 3 > 2 > @ O B, G B > 4 8 A : 8 S a m s u n g > G 5 = L G 0 A B >
 = 8 2 : 0 : C N = 5 E > B O B 2 K ? > ; = O B L ? 5 @ 5 = 0 7 = 0 G 5 = 8 5
 A 5 : B > @ > 2.
 0 A G Q B M B > 3 > 0 B @ 8 1 C B 0 < = 5 = 8 O @ 0 7 = O B A O. 8 G = > O A G 8 B 0 N,
 G B > 5 A ; 8 > = 4 > A B 8 3 1 0, 4 8 A : = C 6 = > > 1 O 7 0 B 5; L = > < 5 = O B L
 2 5 4 L M B > > 7 = 0 G 0 5 B ? @ > 3 @ 5 A A 8 @ C N I 8 9 ? @ > F 5 A A 4 5 3 @ 0 4 0 F 8 8
 A > A B > O = 8 O ? > 2 5 @ E = > A B 8 ; 8 1 > 1; 8 = > 2, ; 8 1 > 3 > ; > 2 > ;,
 ; 8 1 > G 5 3 > - B > 5 I Q 0 ? ? 0 @ 0 B = > 3 >, 8 > A B 0 = > 2 8 B L M B > B
 ? @ > F 5 A A 2 > 7 < > 6 = > A B 8 C 6 5 = 5 B. A B 0 B 8, ? > A 2 5 4 5 = 8 O < ; 8 F,
 ? @ 8 1 ; 8 6 5 == K E : H i t a c h i, A 0 < 0 H i t a c h i A G 8 B 0 5 B 4 8 A : ? > 4 ; 5 6 0 I 8 <
 7 0 < 5 = 5, : > 3 4 0 = 0 = Q < = 0 E > 4 8 B A O C 6 5 5 ? 5 @ 5 = 0 7 = 0 G 5 == K E
 A 5 : B > @ > 2. @ C 3 > 9 2 > ? @ > A, > D 8 F 8 0; L = 0 O ; 8 M B 0 8 = D > @ < 0 F 8 O,
 8 A ; 5 4 C N B ; 8 M B > < C < = 5 = 8 N A 5 @ 2 8 A - F 5 = B @ K. ' B > - B > < = 5
 ? > 4 A : 0 7 K 2 0 5 B, G B > = 5 B
 @ C 3 > 5 4 5 ; >, G B > A > B @ C 4 = 8 : 8 A 5 @ 2 8 A - F 5 = B @ > 2 < > 3 C B
 > B : 0 7 K 2 0 B L A O ? @ 8 7 = 0 2 0 B L 4 8 A : = 5 8 A ? @ 0 2 = K <, 5 A ; 8
 D 8 @ < 5 = = 0 O C B 8 ; 8 B 0 ? @ > 8 7 2 > 4 8 B 5 ; O 4 8 A : 0 ? 8 H 5 B G B > - B >
 2 @ > 4 5 « S . M . A . R . T . S t a t u s : G o o d » 8 ; 8 7 = 0 G 5 = 8 O V a l u e ; 8 1 > W o r s t 0 B @ 8 1 C B 0
 1 C 4 C B 1 > ; L H 5 T h r e s h o l d (A > 1 A B 2 5 == >, ? > B 0 : > < C : @ 8 B 5 @ 8 N
 < > 6 5 B > F 5 = 8 2 0 B L 8 A 0 < 0 C B 8 ; 8 B 0 ? @ > 8 7 2 > 4 8 B 5 ; O).
 D > @ < 0 ; L = > > = 8 1 C 4 C B ? @ 0 2 K. > : > < C = C 6 5 = 4 8 A : A
 ? > A B > O = = K < C E C 4 H 5 = 8 5 < 5 3 > 0 ? ? 0 @ 0 B = K E : > < ? > = 5 = B > 2,
 4 0 6 5 5 A ; 8 B 0 : > 5 C E C 4 H 5 = 8 5 A > > B 2 5 B A B 2 C 5 B ? @ 8 @ > 4 5
 2 8 = G 5 A B 5 @ 0, 0 B 5 E = > ; > 3 8 O ? @ > 8 7 2 > 4 A B 2 0 6 Q A B : 8 E 4 8 A : > 2
 A B 0 @ 0 5 B A O < 8 = 8 < 8 7 8 @ > 2 0 B L 5 3 > ? > A ; 5 4 A B 2 8 O, 2 K 4 5 ; O O,
 = 0 ? @ 8 < 5 @, @ 575 @ 2 = CN > 1; 0 ABL?

B @ 8 1 C B: 07 Seek Error Rate

" 8 ? B 5 : C I 8 9

? 8 A 0 = 8 5 A > 4 5 @ 6 8 B G 0 A B > B C 2 > 7 = 8 : = > 2 5 = 8 O > H 8 1 > : ? @ 8

? > 7 8 F 8 > = 8 @ > 2 0 = 8 8 1 ; > : 0 < 0 3 = 8 B = K E 3 > ; > 2 > : ()

? 8 A 0 = 8 5 D > @ < 8 @ > 2 0 = 8 O M B > 3 > 0 B @ 8 1 C B 0 ? > G B 8

? > ; = > A B L N A > 2 ? 0 4 0 5 B A > ? 8 A 0 = 8 5 < 4 ; O 0 B @ 8 1 C B 0 0 1 Raw Read Error

Rate, 7 0 8 A : ; N G 5 = 8 5 < B > 3 > , G B > 4 ; O 2 8 = G 5 A B 5 @ > 2 Hitachi

= > @ < 0 ; L = K < 7 = 0 G 5 = 8 5 < ? > ; O R A W O 2 ; O 5 B A O B > ; L : > 0.

" 0 : 8 < > 1 @ 0 7 > < , = 0 0 B @ 8 1 C B = 0 4 8 A : 0 E Seagate, Samsung SpinPoint F1 8

= > 2 5 5 8 Fujitsu 2,5 3 = 5 > 1 @ 0 1 0 9 B 5 2 = 8 < 0 = 8 O , = 0 > A B 0 ; L = K E

< > 4 5 ; O E Samsung, 0 B 0 : 6 5 = 0 2 A 5 E W D 8 Hitachi = 5 = C ; 5 2 > 5 7 = 0 G 5 = 8 5

A 2 8 4 5 B 5 ; L A B 2 C 5 B > ? @ > 1 ; 5 < 0 E , = 0 ? @ 8 < 5 @ , A ? > 4 H 8 ? = 8 : > <

8 B. ?.

B @ 8 1 C B: 08 Seek Time Performance

" 8 ? B 5 : C I 8 9

? 8 A 0 = 8 5 A > 4 5 @ 6 8 B A @ 5 4 = N N ? @ > 8 7 2 > 4 8 B 5 ; L = > A B L

> ? 5 @ 0 F 8 9 ? > 7 8 F 8 > = 8 @ > 2 0 = 8 O 3 > ; > 2 > : , 8 7 < 5 @ O 5 B A O 2

« ? > ? C 3 0 O E ». 0 : 8 ? 0 @ 0 < 5 B @ 0 2 Throughput Performance, = 5 = C ; 5 2 > 5

7 = 0 G 5 = 8 5 > 1 K G = > > B < 5 G 0 5 B A O = 0 4 8 A : 0 E Hitachi 8 < > 6 5 B

8 7 < 5 = O B L A O ? > A ; 5 8 7 < 5 = 5 = 8 O ? 0 @ 0 < 5 B @ > 2 , 0 < > 6 5 B 8

A 0 < > ? > A 5 1 5 ? > = 5 8 7 2 5 A B = > < C 0 ; 3 > @ 8 B < C

5 4 0 Q B = 8 : 0 : > 9 8 = D > @ < 0 F 8 8 ? > ; L 7 > 2 0 B 5 ; N 8 = 5 3 > 2 > @ 8 B

= 8 > : 0 : > 9 > ? 0 A = > A B 8 ? @ 8 ; N 1 > < A 2 > Q < 7 = 0 G 5 = 8 8.

B @ 8 1 C B: 09 Power On Hours Count (Power-on Time)

" 8 ? = 0 : 0 ? ; 8 2 0 N I 8 9

? 8 A 0 = 8 5 A > 4 5 @ 6 8 B : > ; 8 G 5 A B 2 > G 0 A > 2 , 2 B 5 G 5 = 8 5 : > B > @ K E

2 8 = G 5 A B 5 @ 1 K ; 2 : ; N G Q =

8 G 5 3 > = 5 3 > 2 > @ 8 B > 7 4 > @ > 2 L 5 4 8 A : 0.

B @ 8 1 C B: 10 (0 2 H 5 A B = 0 4 F 0 B 5 @ 8 G = > 9 A 8 A B 5 < 5 A G 8 A ; 5 = 8 O) Spin

Retry Count

" 8 ? = 0 : 0 ? ; 8 2 0 N I 8 9

? 8 A 0 = 8 5 A > 4 5 @ 6 8 B : > ; 8 G 5 A B 2 > ? > 2 B > @ > 2 7 0 ? C A : 0

H ? 8 = 4 5 ; O , 5 A ; 8 ? 5 @ 2 0 O ? > ? K B : 0 > : 0 7 0 ; 0 A L = 5 C 4 0 G = > 9

7 4 > @ > 2 L 5 4 8 A : 0 G 0 I 5 2 A 5 3 > = 5 3 > 2 > @ 8 B.

A = > 2 = K 5 ? @ 8 G 8 = K C 2 5 ; 8 G 5 = 8 O ? 0 @ 0 < 5 B @ 0 ? ; > E > 9

:>=B0:B 48A:0 A 8;8 =52>7<>6=>ABL 2K40BL =C6=K9
 B>: 2 ;8=8N ?8B0=8O 48A:0.
 8450;5 4>;65= 1KBL @025=0. @87=0G5=88 0B@81CB0,
 @02=><1-2, 2=8<0=8O <>6=> =5 >1 @0I0BL. A;87=0G5=85
 1>;LH5, 2 ?5@2CN >G5@54L A;54C5B >1 @0B8BL
 ?@8AB0;L=>5 2=8<0=85 =0 A>AB>O=85 1;>:0 ?8B0=8O, 53>
 :0G5AB2>, =03@C7:C =0 =53>, ?@>25@8BL :>=B0:B
 28=G5AB5@0 A:015;5< ?8B0=8O, ?@>25@8BL A0<:015;L
 ?8B0=8O.
 025@=O:0 48A: <>65B AB0@B>20BL =5 A@07C 87-70 ?@>1;5< A
 =8< A0<8<, => B0:>5 1K205B >G5=L @54:>, 8 B0:CN
 2>7<>6=>ABL =C6=> @0AA<0B@820BL 2 ?>A;54=NN
 >G5@54L.

B @ 8 1 C B: 11 (0B) Calibration Retry Count (Recalibration Retries)

"8? =0:0?;820N189
 ?8A0=85 A>45@68B :>;8G5AB2> ?>2B>@=KE ?>?KB>:
 A1@>A0 =0:>?8B5;O(CAB0=>2:8 =0 =C;52CN 4>@>6:C)
 ?@8 =5C40G=>9 ?5@2>9 ?>?KB:5

5=C;52>5, 0 >A>15==> @0ABCI55 7=0G5=85 ?0@0<5B@0
 <>65B >7=0G0BL ?@>1;5<K A 48A:><.

B @ 8 1 C B: 12 (0C) Power Cycle Count

"8? =0:0?;820N189
 ?8A0=85 A>45@68B :>;8G5AB2> ?>;=KE F8:;>2
 «2:;NG5=85->B:;NG5=85» 48A:0

5 A2O70= A A>AB>O=85< 48A:0.

B @ 8 1 C B: 161 - Valid Spare Blocks

!>45@68B >AB02H89AO ?@>F5=B 70?0A=KE 1;>:>2,
 4>ABC?=KE =0 B25@4>B5;L=>< CAB@>9AB25. @>F5=B
 =0G8=05BAO A>100% 8>1KG=> C<5=LH05BAO 4>0% 2>2@5<O
 8A?>;L7>20=8O. A;8 MB>B 0B@81CB 4>AB8305B0%,
 B25@4>B5;L=>5 CAB@>9AB2> AB0=>28BAO 4>ABC?=K<
 B>;L:>4;O GB5=8O. AE>4=>5 7=0G5=85 MB>3> 0B@81CB0
 <>65B A>45@60BL D0:B8G5A:>5 :>;8G5AB2> 70?0A=KE
 1;>:>2.

B @ 8 1 C B: 183 (B7) SATA Downshift Error Count

"8? =0:0?;820N189
 ?8A0=85 A>45@68B :>;8G5AB2> =5C40G=KE ?>?KB>:
 ?>=865=8O @568<0SATA. !CBL 2 B><, GB> 28=G5AB5@,

@ 01>B0NI89 2 @ 568<0E SATA3 18B/A 8;86 18B/A(8 GB> B0<
40;LH5 1C45B 2 1C4CI5<), ?>:0:>9-B> ? @ 8G8=5(=0? @ 8<5 @,
87-70 >H81>:) <>65B ?>?KB0BLAO «4>3>2>@8BLAO» A
48A:>2K<:=B @>;;5 @>< > <5=55 A:> @>AB=>< @ 568<5
(=0? @ 8<5 @, SATA 1,5 18B/A 8;83 18B/A A>>B25BAB25==>). A;CG05
«>B:070» :=B @>;;5 @ 0 87<5=OBL @ 568< 48A: C25;8G8205B
7=0G5=85 0B @ 81CB0

5 3>2> @ 8B > 74> @>2L5 =0:>?8B5;O.

B @ 81 C B: 184 (B8) End-to-End Error

"8? =0:0?;820NI89
?8A0=85 A>45 @ 68B :>;8G5AB2> >H81>:, 2>7=8:H8E ? @ 8
?5 @ 540G5 40==KE G5 @ 57 :MH 28=G5AB5 @ 0

5=C;52>5 7=0G5=85 C:07K205B =0 ? @>1;5<K A 48A:><.

B @ 81 C B: 187 (BB) Reported Uncorrected Sector Count (UNC Error)

"8? =0:0?;820NI89
?8A0=85 A>45 @ 68B :>;8G5AB2> A5:B> @>2, :=B> @K5 1K;8
? @ 87=0=K :0=4840B0<8 =0 ?5 @ 5=07=0G5=85(A<. 0B @ 81CB197)
70 2AN 8AB> @ 8N 687=8 48A:0. @ 8GQ< 5A;8 A5:B> @ AB0=>28BAO
:0=4840B>< ?>2B> @=>, 7=0G5=85 0B @ 81CB0 B>65
C25;8G8205BAO
5=C;52>5 7=0G5=85 0B @ 81CB0 O2=> C:07K205B =0
=5=> @<0;L=>5 A>AB>O=85 48A:0(2 A>G5B0=88 A
=5=C;52K< 7=0G5=85< 0B @ 81CB0197) 8;8 =0 B>, GB> >=>
1K;> B0:>2K< @ 0=55(2 A>G5B0=88 A =C;52K< 7=0G5=85<197).

B @ 81 C B: 188 (BC) Command Timeout

"8? =0:0?;820NI89
?8A0=85 A>45 @ 68B :>;8G5AB2> >?5 @ 0F89, 2K?>;=5=85
:=B> @KE 1K;> >B<5=5=> 87-70 ? @ 52KH5=8O <0:A8<0;L=>
4>?CAB8<>3> 2 @ 5<5=8 >6840=8O >B:;8:0
"0:85 >H81:8 <>3CB 2>7=8:0BL 87-70 ?;>E>3> :0G5AB20
:015;59, :=B0:B>2, 8A?>;L7C5<KE ?5 @ 5E>4=8:>2,
C4;8=8B5;59 8 B. 4., 0 B0:65 87-70 =5A>2<5AB8<>AB8 48A:0 A
:=: @ 5B=K<:=B @>;;5 @><SATA/ " =0 <0B5 @ 8=A:>9
?;0B5(;81> 48A: @ 5B=K<). 7-70 >H81>: B0:>3> @>40
2>7<>6=K BSOD 2 Windows.

5=C;52>5 7=0G5=85 0B @ 81CB0 3>2> @ 8B >
?>B5=F80;L=>9 «1>;57=8» 48A:0.

B @ 8 1 C B: 189 (BD) High Fly Writes

" 8 ? = 0 : 0 ? ; 8 2 0 N I 8 9
 ? 8 A 0 = 8 5 A > 4 5 @ 6 8 B : > ; 8 G 5 A B 2 > 7 0 D 8 : A 8 @ > 2 0 == K E A ; C G 0 5 2
 7 0 ? 8 A 8 ? @ 8 2 K A > B 5 ? > ; 5 B 0 3 > ; > 2 : 8 2 K H 5 @ 0 A A G 8 B 0 == > 9
 A : > @ 5 5 2 A 5 3 > , 8 7 - 7 0 2 = 5 H = 8 E 2 > 7 4 5 9 A B 2 8 9 , = 0 ? @ 8 < 5 @
 2 8 1 @ 0 F 8 8 .
 ; O B > 3 > G B > 1 K A : 0 7 0 B L , ? > G 5 < C ? @ > 8 A E > 4 O B B 0 : 8 5 A ; C G 0 8 ,
 = C 6 = > C < 5 B L 0 = 0 ; 8 7 8 @ > 2 0 B L ; > 3 8 S . M . A . R . T . , : > B > @ K 5
 A > 4 5 @ 6 0 B A ? 5 F 8 D 8 G = C N 4 ; O : 0 6 4 > 3 > ? @ > 8 7 2 > 4 8 B 5 ; O
 8 = D > @ < 0 F 8 N , G B > = 0 A 5 3 > 4 = O H = 8 9 4 5 = L = 5 @ 5 0 ; 8 7 > 2 0 = > 2
 > 1 I 5 4 > A B C ? = > < A ; 5 4 > 2 0 B 5 ; L = > , = 0 0 B @ 8 1 C B < > 6 = >
 = 5 > 1 @ 0 I 0 B L 2 = 8 < 0 = 8 O .

B @ 8 1 C B: 190 (BE) Airflow Temperature

" 8 ? B 5 : C I 8 9
 ? 8 A 0 = 8 5 A > 4 5 @ 6 8 B B 5 < ? 5 @ 0 B C @ C 2 8 = G 5 A B 5 @ 0 4 ; O 4 8 A : > 2
 Hitachi, Samsung, WD 8 7 = 0 G 5 = 8 5 «100" [RAW-7=0 G 5 = 8 5 0 B @ 8 1 C B 0 194] » 4 ; O
 Seagate

5 3 > 2 > @ 8 B > A > A B > O = 8 8 4 8 A : 0 .

B @ 8 1 C B: 191 (BF) G-Sensor Shock Count (Mechanical Shock)

" 8 ? = 0 : 0 ? ; 8 2 0 N I 8 9
 ? 8 A 0 = 8 5 A > 4 5 @ 6 8 B : > ; 8 G 5 A B 2 > : @ 8 B 8 G 5 A : 8 E C A : > @ 5 = 8 9 ,
 7 0 D 8 : A 8 @ > 2 0 == K E M ; 5 : B @ > = 8 : > 9 4 8 A : 0 , : > B > @ K <
 ? > 4 2 5 @ 3 0 ; A O = 0 : > ? 8 B 5 ; L 8 : > B > @ K 5 ? @ 5 2 K H 0 ; 8
 4 > ? C A B 8 < K 5 . 1 K G = > M B > ? @ > 8 A E > 4 8 B ? @ 8 C 4 0 @ 0 E ,
 ? 0 4 5 = 8 O E 8 B . ? .
 : B C 0 ; 5 = 4 ; O < > 1 8 ; L = K E 2 8 = G 5 A B 5 @ > 2 . 0 4 8 A : 0 E Samsung = 0
 = 5 3 > G 0 A B > < > 6 = > = 5 > 1 @ 0 I 0 B L 2 = 8 < 0 = 8 O , B . : . > = 8
 < > 3 C B 8 < 5 B L > G 5 = L G C 2 A B 2 8 B 5 ; L = K 9 4 0 B G 8 . , : > B > @ K 9 ,
 > 1 @ 0 7 = > 3 > 2 > @ O , @ 5 0 3 8 @ C 5 B G C B L ; 8 = 5 = 0 4 2 8 6 5 = 8 5
 2 > 7 4 C E 0 > B : @ K ; L 5 2 ? @ > ; 5 B 0 N I 5 9 2 > 4 = > < ? > < 5 I 5 = 8 8 A
 4 8 A : > < < C E 8 .
 > > 1 I 5 A @ 0 1 0 B K 2 0 = 8 5 4 0 B G 8 : 0 = 5 O 2 ; O 5 B A O ? @ 8 7 = 0 : > <
 C 4 0 @ 0 . > 6 5 B @ 0 A B 8 4 0 6 5 > B ? > 7 8 F 8 > = 8 @ > 2 0 = 8 O A 0 < 8 <
 4 8 A : > < , > A > 1 5 == > 5 A ; 8 5 3 > = 5 7 0 : @ 5 ? 8 B L . A = > 2 = > 5
 = 0 7 = 0 G 5 = 8 5 4 0 B G 8 : 0 ? @ 5 : @ 0 B 8 B L > ? 5 @ 0 F 8 N 7 0 ? 8 A 8 ? @ 8
 2 8 1 @ 0 F 8 O E , G B > 1 K 8 7 1 5 6 0 B L > H 8 1 > : .

5 3 > 2 > @ 8 B > 7 4 > @ > 2 L 5 4 8 A : 0 .

B @ 8 1 C B: 192 (!0) Power Off Retract Count (Emergency Retry Count)

"8? = 0:0?;820N189
 ?8A0=85 4;O @07=KE 28=G5AB5 @>2 <>65B A>45 @60BL >4=C
 87 A;54CN18E 42CE E0@0:B5 @8AB8:: ;81> AC<<0 @=>5
 :>;8G5AB2> ?0@:>2>: 48A:0 2 020 @89=KE A8BC0F8OE(?>
 A83=0;C >B 281 @>40BG8:0, >1 @K2C/?>=865=8N ?8B0=8O 8
 B. ?), ;81> AC<<0 @=>5 :>;8G5AB2> F8:;>2
 2::NG5=8O/2K::NG5=8O ?8B0=8O 48A:0(E0@0:B5 @=> 4;O
 A>2 @5<5==KE WD 8 Hitachi)

5 ?>72>;O5B AC48BL > A>AB>O=88 48A:0.

B @ 81 C B: 193 (!1) Load/Unload Cycle Count

"8? = 0:0?;820N189
 ?8A0=85 A>45 @68B :>;8G5AB2> ?>;=KE F8:;>2
 ?0@:>2:8/ @0A?0@:>2:8 . =0;87 MB>3> 0B@81CB0 >48=
 87 A?>A>1>2>? @545;8BL, 2::NG5=0 ;8 =0 48A:5 DC=:F8O
 02B><0B8G5A:>9 ?0@:>2:8(AB>;L ;N18<0O, =0? @8<5 @,
 :><?0=859 Western Digital): 5A;8 53> A>45 @68<>5 ? @52>AE>48B
 (>1KG=> <=>3>: @0B=>) A>45 @68<>5 0B@81CB009 AGQBG8:
 >B @01>B0==KE G0A>2, B> ?0@:>2:0 2::NG5=0

5 3>2> @8B > 74> @>2L5 48A:0.

B @ 81 C B: 194 (!2) Temperature (HDA Temperature, HDD Temperature)

"8? B5:CI89/=0:0?;820N189
 ?8A0=85 A>45 @68B B5:CI89 B5<?5 @0BC @C 48A:0.
 "5<?5 @0BC @0 AG8BK205BAO A 40BG8:0, :>B> @K9 =0 @07=KE
 <>45;OE <>65B @0A?>;030BLAO 2 @07=KE <5AB0E. >;5
 2<5AB5 A B5:CI59 B0:65 <>65B A>45 @60BL <0:A8<0;L=CN 8
 <8=8<0;L=CN B5<?5 @0BC @K, 70D8:A8@>20==K5 70 2AQ 2 @5<O
 M:A?;C0B0F88 28=G5AB5 @0.
 A>AB>O=88 48A:0 0B@81CB =5 3>2> @8B, => ?>72>;O5B
 :>=B @>;8 @>20BL >48= 87 206=59H8E ?0@0<5B @>2. >Q
 <=5=85: ? @8 @01>B5 AB0 @09B5AL =5 4>?CA:0BL ?>2KH5=8O
 B5<?5 @0BC @K 28=G5AB5 @0 2KH550 3 @04CA>2, E>BL
 ? @>872>48B5;5< >1KG=> 8 45::0 @8 @C5BAO <0:A8<0;L=K9
 ? @545; B5<?5 @0BC @K 255-60 3 @04CA>2.

B @ 81 C B: 195 (!3) Hardware ECC Recovered

"8? = 0:0?;820N189
 ?8A0=85 A>45 @68B :>;8G5AB2> >H81>;, :>B> @K5 1K;8
 A:> @ @5:B8 @>20=K 0??0 @0B=K<8 A @54AB20<8ECC 48A:0.
 A>15==>AB8, ? @8ACI85 MB><C 0B @81CBC =0 @07=KE
 48A:0E, ?>;=>ABLN A>>B25BAB2CNB B0:>2K< 0B @81CB>201 807.

B @ 8 1 C B: 196 (!4) Reallocated Event Count

" 8 ? = 0 : 0 ? ; 8 2 0 N I 8 9
 ? 8 A 0 = 8 5 A > 4 5 @ 6 8 B : > ; 8 G 5 A B 2 > > ? 5 @ 0 F 8 9
 ? 5 @ 5 = 0 7 = 0 G 5 = 8 O A 5 : B > @ > 2
 > A 2 5 == > 3 > 2 > @ 8 B > 7 4 > @ > 2 L 5 4 8 A : 0 . ' 5 < 1 > ; L H 5
 7 = 0 G 5 = 8 5 B 5 < E C 6 5 . 4 = 0 : > = 5 ; L 7 O > 4 = > 7 = 0 G = > A C 4 8 B L
 > 7 4 > @ > 2 L 5 4 8 A : 0 ? > M B > < C ? 0 @ 0 < 5 B @ C , = 5 @ 0 A A < 0 B @ 8 2 0 O
 4 @ C 3 8 5 0 B @ 8 1 C B K .
 - B > B 0 B @ 8 1 C B = 5 ? > A @ 5 4 A B 2 5 == > A 2 O 7 0 = A 0 B @ 8 1 C B > < 0 5 . @ 8
 @ > A B 5 1 9 6 G 0 1 5 2 A 5 3 > @ 0 A B Q B 8 0 5 . A ; 8 ? @ 8 @ > A B 5 0 B @ 8 1 C B 0 1 9 6
 0 B @ 8 1 C B 0 5 = 5 @ 0 A B Q B , 7 = 0 G 8 B , ? @ 8 ? > ? K B : 5 @ 5 < 0 ? 0 : 0 = 4 8 4 0 B 2
 1 M 4 - 1 ; > : 8 > : 0 7 0 ; A O A > D B - 1 M 4 > < (? > 4 @ > 1 = > A B 8 A < . = 8 6 5) , 8
 4 8 A : 8 A ? @ 0 2 8 ; 5 3 > , B 0 : G B > A 5 : B > @ 1 K ; ? @ 8 7 = 0 = 7 4 > @ > 2 K < , 8
 2 ? 5 @ 5 = 0 7 = 0 G 5 = 8 8 = 5 1 K ; > = 5 > 1 E > 4 8 < > A B 8 .
 A ; 8 0 B @ 8 1 C B 1 9 6 < 5 = L H 5 0 B @ 8 1 C B 0 0 5 , 7 = 0 G 8 B , 2 > 2 @ 5 < O
 = 5 : > B > @ K E > ? 5 @ 0 F 8 9 ? 5 @ 5 = 0 7 = 0 G 5 = 8 O 2 K ? > ; = O ; A O
 ? 5 @ 5 = > A = 5 A : > ; L : 8 E ? > 2 @ 5 6 4 Q == K E A 5 : B > @ > 2 7 0 > 4 8 =
 ? @ 8 Q < .
 A ; 8 0 B @ 8 1 C B 1 9 6 1 > ; L H 5 0 B @ 8 1 C B 0 0 5 , 7 = 0 G 8 B , ? @ 8 = 5 : > B > @ K E
 > ? 5 @ 0 F 8 O E ? 5 @ 5 = 0 7 = 0 G 5 = 8 O 1 K ; 8 > 1 = 0 @ C 6 5 = K
 8 A ? @ 0 2 ; 5 == K 5 2 ? > A ; 5 4 A B 2 8 8 A > D B - 1 M 4 K .

B @ 8 1 C B: 197 (!5) Current Pending Sector Count

" 8 ? B 5 : C I 8 9
 ? 8 A 0 = 8 5 A > 4 5 @ 6 8 B : > ; 8 G 5 A B 2 > A 5 : B > @ > 2 : 0 = 4 8 4 0 B > 2 = 0
 ? 5 @ 5 = 0 7 = 0 G 5 = 8 5 2 @ 5 7 5 @ 2 = C N > 1 ; 0 A B L .
 0 B K : 0 O A L 2 ? @ > F 5 A A 5 @ 0 1 > B K = 0 « = 5 E > @ > H 8 9 » A 5 : B > @
 (= 0 ? @ 8 < 5 @ , : > = B @ > ; L = 0 O A C < < 0 A 5 : B > @ 0 = 5
 A > > B 2 5 B A B 2 C 5 B 4 0 = = K < 2 = Q <) , 4 8 A : ? > < 5 G 0 5 B 5 3 > : 0 :
 : 0 = 4 8 4 0 B = 0 ? 5 @ 5 = 0 7 = 0 G 5 = 8 5 , 7 0 = > A 8 B 5 3 > 2 A ? 5 F 8 0 ; L = K 9
 2 = C B @ 5 == 8 9 A ? 8 A > : 8 C 2 5 ; 8 G 8 2 0 5 B ? 0 @ 0 < 5 B @ 1 9 7 . 7 M B > 3 >
 A ; 5 4 C 5 B , G B > = 0 4 8 A : 5 < > 3 C B 1 K B L ? > 2 @ 5 6 4 Q == K 5 A 5 : B > @ K , >
 : > B > @ K E > = 5 I Q = 5 7 = 0 5 B 2 5 4 L = 0 ? ; 0 A B 8 = 0 E 2 ? > ; = 5
 < > 3 C B 1 K B L > 1 ; 0 A B 8 , : > B > @ K 5 2 8 = G 5 A B 5 @ : 0 : > 5 - B > 2 @ 5 < O
 = 5 8 A ? > ; L 7 C 5 B .
 @ 8 ? > ? K B : 5 7 0 ? 8 A 8 2 A 5 : B > @ 4 8 A : A = 0 G 0 ; 0 ? @ > 2 5 @ O 5 B , = 5
 = 0 E > 4 8 B A O ; 8 M B > B A 5 : B > @ 2 A ? 8 A : 5 : 0 = 4 8 4 0 B > 2 . A ; 8 A 5 : B >
 B 0 < = 5 = 0 9 4 5 = , 7 0 ? 8 A L ? @ > E > 4 8 B > 1 K G = K < ? > @ O 4 : > < . A ; 8
 6 5 = 0 9 4 5 = , ? @ > 2 > 4 8 B A O B 5 A B 8 @ > 2 0 = 8 5 M B > 3 > A 5 : B > @ 0
 7 0 ? 8 A L N - G B 5 = 8 5 < . A ; 8 2 A 5 B 5 A B > 2 K 5 > ? 5 @ 0 F 8 8 ? @ > E > 4 O B
 => @ < 0 ; L = , B > 4 8 A : A G 8 B 0 5 B , G B > A 5 : B > @ 8 A ? @ 0 2 5 = . (" . 5 .
 1 K ; B . = . « A > D B - 1 M 4 » > H 8 1 > G = K 9 A 5 : B > @ 2 > 7 = 8 : = 5 ? >
 2 8 = 5 4 8 A : 0 , 0 ? > 8 = K < ? @ 8 G 8 = 0 < : = 0 ? @ 8 < 5 @ , 2 < > < 5 = B
 7 0 ? 8 A 8 8 = D > @ < 0 F 8 8 > B : ; N G 8 ; > A L M ; 5 : B @ 8 G 5 A B 2 > , 8 4 8 A :
 ? @ 5 @ 2 0 ; 7 0 ? 8 A L , 7 0 ? 0 @ : > 2 0 2 . 8 B > 3 5 4 0 = = K 5 2 A 5 : B > @ 5

>:06CBAO =54>?8A0==K<8, 0 :>=B@>;L=0O AC<<0 A5:B>@0,
7028AOI0O >B 40==KE 2 =Q<, 2>>1I5 >AB0=5BAO AB0 @>9.
0;8F> 1C45B @0AE>645=85 <564C =5N 8 40==K<8 2
A5:B>@5.) B0:>< A;CG05 48A: ? @>2>48B 87=0G0;L=>
70? @>H5==CN 70?8AL 8 C40;O5B A5:B>@ 87 A?8A:0
:0=4840B>2. @8 MB>< 0B@81CB197 C<5=LH05BAO, B0:65
2>7<>6=> C25;8G5=85 0B@81CB0196.
A;8 65 B5AB8 @>20=85 70:0=G8205BAO =5C40G59, 48A:
2K?>;=O5B >?5 @0F8N ?5 @5=07=0G5=8O, C<5=LH0O 0B@81CB
197, C25;8G820O196 805, 0 B0:65 45;05B ?><5B:8 2 G-list.
B0:; =5=C;52>5 7=0G5=85 ?0 @0<5B@0 3>2> @8B >
=5?>;04:0E (? @0240, =5 <>65B A:070BL > B><, 2 A0<> < ;8
48A:5 ? @>1;5<0).
@8 =5=C;52>< 7=0G5=88 =C6=> >1O70B5;L=> 70?CAB8BL
2 ? @>3 @0<<0E Victoria 8;8MHDD ?>A;54>20B5;L=>5 GB5=85 2A59
?>25 @E=>AB8 A >?F859remap. ">340 ? @8 A:0=8 @>20=88 48A:
>1O70B5;L=> =0B:=QBAO =0 ?;>E>9 A5:B>@ 8 ?>?KB05BAO
? @>8725AB8 70?8AL 2 =53>(2 A;CG05 Victoria 3.5 8 >?F88 Advanced remap
48A: 1C45B ?KB0BLAO 70?8A0BL A5:B>@ 4>10 @07). "0:8<
>1 @07>< ? @>3 @0<<0 A? @>2>F8 @C5B « ;5G5=85 » A5:B>@0, 8
2 8B>35 A5:B>@ 1C45B ;81> 8A? @02;5=, ;81>
?5 @5=07=0G5=.
A;CG05 =5C40G8 GB5=8O :0: A remap, B0: 8 A Advanced remap, AB>8B
?>? @>1>20BL 70?CAB8BL ?>A;54>20B5;L=CN 70?8AL 2
B5E 65 Victoria 8;8MHDD. #G8BK209B5, GB> >?5 @0F8O 70?8A8 AB8 @05B
40==K5, ?>MB><C ?5 @54 5Q ? @8<5=5=85< >1O70B5;L=>
45;09B5 1M:0?!
=>340 >B =52K?>;=5=8O @5<0?0 <>3CB ?><>GL
A;54CNI85 <0=8?C;OF88: A=8<8B5 ?;0BC M;5:B @>=8:8
48A:0 8 ?>G8AB8B5 :>=B0:BK 35 @<>1;>:0 28=G5AB5 @0,
A>548=ONI85 53> A ?;0B>9 >=8 <>3CB 1KBL >:8A;5=K.
C4L 0::C @0B=K ? @8 2K?>;=5=88 MB>9 ? @>F54C @K 87-70
=5Q <>6=> ;8H8BLAO 30 @0=B88!
52>7<>6=>ABL @5<0?0 <>65B 1KBL >1CA;>2;5=0 5IQ
>4=>9 ? @8G8=>9 48A: 8AG5 @?0; @575 @2=CN >1;0ABL, 8
5<C ? @>AB> =5:C40 ?5 @5=07=0G0BL A5:B>@K.
A;8 65 7=0G5=85 0B@81CB0197 =8:0:8<8 <0=8?C;OF8O<8 =5
A=8605BAO 4>0, A;54C5B 4C<0BL >70<5=5 48A:0.

B @ 81 C B: 198 (!6) Offline Uncorrectable Sector Count (Uncorrectable Sector Count)

"8? B5:C189
?8A0=85 >7=0G05B B> 65 A0<>5, GB> 8 0B@81CB197, =>
>B;8G85 2 B><, GB> 40==K9 0B@81CB A>45 @68B :>;8G5AB2>
A5:B>@>2:0=4840B>2, >1=0 @C65==KE ? @8 >4=>< 87 284>2
A0<>B5AB8 @>20=8O 48A:0 >DD;09=-B5AB8 @>20=88,
:>B> @>5 48A: 70?CA:05B 2 ? @>AB>5 2 A>>B25BAB288 A

? 0 @ 0 < 5 B @ 0 < 8, 7 0 4 0 == K < 8 ? @ > H 8 2 : > 9.
 0 @ 0 < 5 B @ M B > B 8 7 < 5 = O 5 B A O B >; L : > ? > 4 2 > 7 4 5 9 A B 2 8 5 <
 > D D ; 0 9 = - B 5 A B 8 @ > 2 0 = 8 O, = 8 : 0 : 8 5 A : 0 = 8 @ > 2 0 = 8 O
 ? @ > 3 @ 0 < 0 < 8 = 0 = 5 3 > = 5 2 ; 8 O N B. @ 8 > ? 5 @ 0 F 8 O E 2 > 2 @ 5 < O
 A 0 < > B 5 A B 8 @ > 2 0 = 8 O ? > 2 5 4 5 = 8 5 0 B @ 8 1 C B 0 B 0 : > 5 6 5, : 0 : 8
 0 B @ 8 1 C B 0 1 9 7.
 5 = C ; 5 2 > 5 7 = 0 G 5 = 8 5 3 > 2 > @ 8 B > = 5 ? >; 0 4 : 0 E = 0 4 8 A : 5
 (B > G = > B 0 : 6 5, : 0 : 8 1 9 7, = 5 : > = : @ 5 B 8 7 8 @ C O, : B > 2 8 = > 2 0 B).

B @ 8 1 C B : 199 (! 7) UltraDMA CRC Error Count

" 8 ? = 0 : 0 ? ; 8 2 0 N I 8 9
 ? 8 A 0 = 8 5 A > 4 5 @ 6 8 B : >; 8 G 5 A B 2 > > H 8 1 >; 2 > 7 = 8 : H 8 E ? @ 8
 ? 5 @ 5 4 0 G 5 ? > 8 = B 5 @ D 5 9 A = > < C : 0 1 5 ; N 2 @ 5 6 8 < 5 UltraDMA (8 ; 8
 5 3 > M < C ; O F 8 8 2 8 = G 5 A B 5 @ 0 < 8 SATA) > B < 0 B 5 @ 8 = A : > 9 ? ; 0 B K 8 ; 8
 4 8 A : @ 5 B = > 3 > : > = B @ >; ; 5 @ 0 : > = B @ >; ; 5 @ C 4 8 A : 0.
 ? > 4 0 2 ; O N I 5 < 1 >; L H 8 = A B 2 5 A ; C G 0 5 2 ? @ 8 G 8 = 0 < 8 > H 8 1 > :
 A B 0 = > 2 O B A O = 5 : 0 G 5 A B 2 5 = = K 9 H ; 5 9 D ? 5 @ 5 4 0 G 8 4 0 = = K E,
 @ 0 7 3 > = H 8 = P C I / P C I - E : > < ? L N B 5 @ 0 ; 8 1 > ? ; > E > 9 : > = B 0 : B 2
 SATA - @ 0 7 J Q < 5 = 0 4 8 A : 5 8 ; 8 = 0 < 0 B 5 @ 8 = A : > 9
 ? ; 0 B 5 / : > = B @ >; ; 5 @ 5.
 H 8 1 : 8 ? @ 8 ? 5 @ 5 4 0 G 5 ? > 8 = B 5 @ D 5 9 A C 8, : 0 : A ; 5 4 A B 2 8 5,
 @ 0 A B C I 5 5 7 = 0 G 5 = 8 5 0 B @ 8 1 C B 0 < > 3 C B ? @ 8 2 > 4 8 B L :
 ? 5 @ 5 ; ; N G 5 = 8 N > ? 5 @ 0 F 8 > = > 9 A 8 A B 5 < > 9 @ 5 6 8 < 0 @ 0 1 > B K
 : 0 = 0 ; 0, = 0 : > B > @ > < = 0 E > 4 8 B A O = 0 : > ? 8 B 5 ; L, 2 @ 5 6 8 < P I O,
 G B > 2 ; 5 G Q B @ 5 7 : > 5 ? 0 4 5 = 8 5 A : > @ > A B 8 G B 5 = 8 O / 7 0 ? 8 A 8 ? @ 8
 @ 0 1 > B 5 A = 8 < 8 7 0 3 @ C 7 : C ? @ > F 5 A A > @ 0 4 > 1 0 0 % (2 8 4 = > 2
 8 A ? 5 B G 5 @ 5 7 0 4 0 G Windows).
 A ; C G 0 5 2 8 = G 5 A B 5 @ > 2 Hitachi A 5 @ 8 9 Deskstar 7 3000 8 5 3000 @ 0 A B C I 8 9
 0 B @ 8 1 C B < > 6 5 B 3 > 2 > @ 8 B L > = 5 A > 2 < 5 A B 8 < > A B 8 4 8 A : 0 8
 SATA - : > = B @ >; ; 5 @ 0. ' B > 1 K 8 A ? @ 0 2 8 B L A 8 B C 0 F 8 N, = C 6 = >
 ? @ 8 = C 4 8 B 5 ; L = > ? 5 @ 5 ; ; N G 8 B L B 0 : > 9 4 8 A : 2 @ 5 6 8 < SATA 3
 1 8 B / A.
 > Q < = 5 = 8 5 : ? @ 8 = 0 ; 8 G 8 8 > H 8 1 > : ? 5 @ 5 ? > 4 ; ; N G 8 B 5
 : 0 1 5 ; L A > 1 > 8 E : > = F > 2 ; 5 A ; 8 8 E : >; 8 G 5 A B 2 > @ 0 A B Q B 8 > = >
 1 >; L H 5 1 0 2 K 1 @ 0 A K 2 0 9 B 5 H ; 5 9 D 8 A B 0 2 L B 5 2 < 5 A B > = 5 3 >
 = > 2 K 9 8 ; 8 A = 8 < 0 9 B 5 @ 0 7 3 > =.

> 6 = > A G 8 B 0 B L, G B > > 7 4 > @ > 2 L 5 4 8 A : 0 0 B @ 8 1 C B = 5 3 > 2 > @ 8 B.

B @ 8 1 C B : 200 (! 8) Write Error Rate (MultiZone Error Rate)

" 8 ? B 5 : C I 8 9
 ? 8 A 0 = 8 5 A > 4 5 @ 6 8 B G 0 A B > B C 2 > 7 = 8 : = > 2 5 = 8 O > H 8 1 > : ? @ 8
 7 0 ? 8 A 8.
 5 = C ; 5 2 > 5 7 = 0 G 5 = 8 5 3 > 2 > @ 8 B > ? @ > 1 ; 5 < 0 E A 4 8 A : > < 2
 G 0 A B = > A B 8, C 4 8 A : > 2 W D 1 >; L H 8 5 F 8 D @ K < > 3 C B > 7 = 0 G 0 B L

« C < 8 @ 0 N I 8 5 » 3 > ; > 2 : 8.

B @ 8 1 C B: 201 (! 9) Soft Read Error Rate

" 8 ? B 5 : C I 8 9

? 8 A 0 = 8 5 A > 4 5 @ 6 8 B G 0 A B > B C 2 > 7 = 8 : = > 2 5 = 8 O > H 8 1 > :

G B 5 = 8 O , ? @ > 8 7 > H 5 4 H 8 E ? > 2 8 = 5 ? @ > 3 @ 0 < < = > 3 >

> 1 5 A ? 5 G 5 = 8 O

; 8 O = 8 5 = 0 7 4 > @ > 2 L 5 = 5 8 7 2 5 A B = > .

B @ 8 1 C B: 202 (!) Data Address Mark Error

" 8 ? = 5 8 7 2 5 A B = >

? 8 A 0 = 8 5 A > 4 5 @ 6 0 = 8 5 0 B @ 8 1 C B 0 7 0 3 0 4 : 0 , = >

? @ > 0 = 0 ; 8 7 8 @ > 2 0 2 @ 0 7 ; 8 G = K 5 4 8 A : 8 , < > 3 C : > = A B 0 B 8 @ > 2 0 B L ,

G B > = 5 = C ; 5 2 > 5 7 = 0 G 5 = 8 5 M B > ? ; > E >

B @ 8 1 C B: 203 (CB) Run Out Cancel

" 8 ? B 5 : C I 8 9

? 8 A 0 = 8 5 A > 4 5 @ 6 8 B : > ; 8 G 5 A B 2 > > H 8 1 > : ECC

; 8 O = 8 5 = 0 7 4 > @ > 2 L 5 = 5 8 7 2 5 A B = > .

B @ 8 1 C B: 220 (DC) Disk Shift

" 8 ? B 5 : C I 8 9

? 8 A 0 = 8 5 A > 4 5 @ 6 8 B 8 7 < 5 @ 5 = = K 9 2 = 5 8 7 2 5 A B = K E 5 4 8 = 8 F 0 E

A 4 2 8 3 ? ; 0 A B 8 = 4 8 A : 0 > B = > A 8 B 5 ; L = > > A 8 H ? 8 = 4 5 ; O

; 8 O = 8 5 = 0 7 4 > @ > 2 L 5 = 5 8 7 2 5 A B = > .

B @ 8 1 C B: 240 (F0) Head Flying Hours

" 8 ? = 0 : 0 ? ; 8 2 0 N I 8 9

? 8 A 0 = 8 5 A > 4 5 @ 6 8 B 2 @ 5 < O , 7 0 B @ 0 G 5 = = > 5 = 0

? > 7 8 F 8 > = 8 @ > 2 0 = 8 5 . ! G Q B G 8 : < > 6 5 B A > 4 5 @ 6 0 B L

= 5 A : > ; L : > 7 = 0 G 5 = 8 9 2 > 4 = > < ? > ; 5

; 8 O = 8 5 = 0 7 4 > @ > 2 L 5 = 5 8 7 2 5 A B = > .

B @ 8 1 C B: 254 (FE) Free Fall Event Count

" 8 ? = 0 : 0 ? ; 8 2 0 N I 8 9

? 8 A 0 = 8 5 A > 4 5 @ 6 8 B 7 0 D 8 : A 8 @ > 2 0 = = > 5 M ; 5 : B @ > = 8 : > 9

: > ; 8 G 5 A B 2 > C A : > @ 5 = 8 9 A 2 > 1 > 4 = > 3 > ? 0 4 5 = 8 O 4 8 A : 0 ,

:>B>@K<>=?>425@30;AO, B. 5., ?@>I53>2>@O, ?>:07K205B,
A:>;L:>@0748A: ?040;

;8O=85=074>@>2L5=58725AB=>.

12 0 ? @ 5; O 2012 3. 2B>@ 235=89 040; O=

B: C 4 0- B> A ixbt : 0 6 5 B A O...

Details

Info Tuesday 15 July 2014 - 00:38:38 by vampyr

Vampyr`s House!