

#501

HELIOS A AND B
HOURLY AVERAGED MAGNETIC FIELD DATA
74-097A-02A
76-003A-02A

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1. INTRODUCTION:

The documentation for this data set was originally on paper, kept in NSSDC's Data Set Catalogs (DSCs). The paper documentation in the Data Set Catalogs have been made into digital images, and then collected into a single PDF file for each Data Set Catalog. The inventory information in these DSCs is current as of July 1, 2004. This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system. The information existing in the DSCs is now not needed for locating the data files, but we did not remove that inventory information.

The offline tape datasets have now been migrated from the original magnetic tape to Archival Information Packages (AIP's).

A prior restoration may have been done on data sets, if a requestor of this data set has questions; they should send an inquiry to the request office to see if additional information exists.

2. ERRATA/CHANGE LOG:

NOTE: Changes are made in a text box, and will show up that way when displayed on screen with a PDF reader.

When printing, special settings may be required to make the text box appear on the printed output.

Version	Date	Person	Page	Description of Change
01				
02				

3 LINKS TO RELEVANT INFORMATION IN THE ONLINE NSSDC
INFORMATION SYSTEM:

<http://nssdc.gsfc.nasa.gov/nmc/>

[NOTE: This link will take you to the main page of the NSSDC Master Catalog. There you will be able to perform searches to find additional information]

4. CATALOG MATERIALS:

- a. Associated Documents To find associated documents you will need to know the document ID number and then click here.
<http://nssdcftp.gsfc.nasa.gov/miscellaneous/documents/>

- b. Core Catalog Materials

HELIOS-A

HOURLY AVERAGED MAGNETIC FIELD

74-097A-02A SPHE-00003

THIS DATA SET HAS BEEN RESTORED. ORIGINALLY IT CONTAINED ONE 9-TRACK, 6250 BPI TAPE WRITEN IN BINARY. THERE IS ONE RESTORED TAPE. THE DR TAPE IS A 3480 CARTRIDGE AND THE DS TAPE IS 9-TRACK, 6205 BPI. THE ORIGINAL TAPE WAS CREATED ON AN IBM 360 COMPUTER AND WAS RESTORED ON THE MRS SYSTEM. THE DR AND DS NUMBER ALONG WITH THE CORRESPONDING D NUMBER AND TIME SPAN IS AS FOLLOWS:

DR#	DS#	D#	FILES	TIME SPAN
DR005274	DS005274	D045444	2	12/14/74 - 12/31/77

HELIOS-B

HOURLY AVERAGED MAGNETIC FIELD

76-003A-02A SPHE-00436

This data set has been restored. There was originally one 9-track, 6250 BPI tape written in Binary. There is one restored tape. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The original tape was created on an IBM 360 computer and the restored tape was created on an IBM 9021 computer. The DR and DS numbers along with the corresponding D number are as follows:

DR#	DS#	D#	FILES	TIME SPAN
-----	-----	-----	-----	-----
DR005356	DS005356	D045445	1 - 2	01/17/76 - 12/31/77

REQ. AGENT

RD#

ACQ. AGENT

LSM

V0092

HKH

HELIOS A & B

HOURLY AVERAGED
MAGNETIC FIELD

74-097A-02A

76-003A-02A

This Data Set catalog consists of 1 Helios A and 1 Helios B tape. They are 6250, Binary, 9 track, and have 2 files each. The Tapes were created on the IBM 360 computer.

'D' and 'C' numbers plus Time Span are as follows:

74-097A-02A

<u>D#</u>	<u>C#</u>	<u>Time Span</u>
D-45444	C-21662	12/14/74-12/31/77

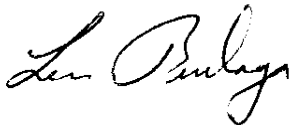
76-003A-02A

<u>D#</u>	<u>C#</u>	<u>Time Span</u>
D-45445	C-21663	01/17/76-12/31/77

July 9, 1981

TO: 601/Director, National Space Science Data Center
FROM: 692/Interplanetary Physics Branch/L. F. Burlaga

Accompanying this memo you will find data from the magnetic field experiment E3 on Helios 1 and 2 (Principal Investigator, Dr. F. Mariani) which we are submitting for deposit in the NSSDC. Specifically, I am sending: 1) two tapes with hour averages of the magnetic field; 2) printouts of the data on those tapes; and 3) a 2-page description of the data on the tapes and the tape format. These are not the "final" data from the period from launch to 1978, but they are the best and most complete data that we have.



Leonard F. Burlaga

Attachments

Helios Magnetic Field (E3) Hour-Average Data Tapes

JULY 1, 1981

- 1) There are 2 tapes, one with Helios-A data and another with Helios-B data.
- 2) Description of Tape: 9 tracks, 6250 BPI, RECFM = FB, BLKSIZE = 32000,

LRECL = 80, LABEL = NL
- 3) There are 2 files on each tape--the first contains a table describing the symbols of the data on the tape and, the second file gives the magnetic field data.
- 4) Description of the data:

IK = 0 for data taken at bit rate $\geq$ 256 BPS (Detail Mode)
= 1 at bit rate $\leq$ 128 BPS (Average Mode)

HEL = Name of S/C, A or B

IYY = Year with first two digits suppressed

ITIPO = Quality information (0 for good data, 1 for doubtful data)

IDD = Day (Jan. 1 = Day 1)

IHH = Hour

IMM = Min.

} *Time of the beginning of the 1-hour average.*

X = XSE Field Component (In ecliptic, oriented toward Sun) (*)

Y = YSE Field Component (In ecliptic, perpendicular to XSE, and oriented opposite to the earth's velocity) (*)

Z = ZSE Field Component (Perpendicular to ecliptic, oriented celestial northward) (*)

B = $\text{SQRT}(\langle \text{XSE} \rangle^{**2} + \langle \text{YSE} \rangle^{**2} + \langle \text{ZSE} \rangle^{**2})$

T = Elevation angle of the vector B over ecliptic. (**)

PH = Longitude of B (PH = 0 toward the sun, 90 deg. along YSE (**)

BB = Average of individual vectors B (Not available yet; at present

it is put = 0.0)

- N = Number of individual vectors in each average
- V1 = Standard deviation on B
- V2 = Standard deviation on BB (Not available yet; at present
it is put = 0.0)
- NP = Progressive list number
- (*) = The Z component has been corrected for any spurious
contribution from S/C.
The X, Y components are corrected for any similar effect when
in detail mode (IK = 0). No correction has been made on the X,
Y components when in average mode. (IK = 1).
- (**) = Some uncertainty (usually < or = 5 degrees) in this angle is
possible when in average mode due to reasons explained in
(*).

Helios Magnetic Field (E3) Hour-Average Data Tapes

JULY 1, 1981

ASCII VERSION

- 1) There are 2 tapes, one with Helios-A data and another with Helios-B data.
- 2) Description of Tape: 9 track, 6250 BPI, RECFM=FB, BLKSIZE=25600, LRECL=64, LABEL=NL.
- 3) There are 2 files on each tape--the first contains a table describing the symbols of the data on the tape, and the second contains the magnetic field data.
- 4) Description of the Data:

<u>TYPE</u>	<u>WORD</u>	<u>BYTE</u>	<u>DESCRIPTION</u>
I1	IK	2	0 for data taken at bit rate > 256 BPS (Detail Mode) 1 for data taken at bit rate < 128 BPS (Avg. Mode)
A1	HEL	1	Name of S/C, A or B
I2	IYY	4-5	Year with first two digits suppressed
I1	ITIPO	3	Quality information (0 for good data, 1 for doubtful data)
I3	IDD	6-8	Day of Year (Jan. 1 = Day 1)
I2	IHH	9-10	Hour
I2	IMM	11-12	Min
F7.2	B _x	13-19	} Time of the beginning of the 1-hour average
F7.2	B _y	20-26	
F7.2	B _z	27-33	XSE Field Component (In ecliptic, oriented toward Sun)*
F7.2	B	34-40	YSE Field Component (In ecliptic, perpendicular to XSE and oriented opposite to the earth's velocity)*
F6.2	T	41-46	ZSE Field Component (Perpendicular to ecliptic, oriented celestial northward)*
F6.2	PH	47-52	$\sqrt{\langle B_x \rangle^2 + \langle B_y \rangle^2 + \langle B_z \rangle^2}$ Elevation angle of the vector B over ecliptic**
F6.2	PH	47-52	Longitude of B (PH=0 toward the sun, 90 degrees along YSE)**

<u>TYPE</u>	<u>WORD</u>	<u>BYTE</u>	<u>DESCRIPTION</u>
I5	N	53-57	Number of individual vectors in each average
F7.2	V1	58-64	Standard deviation on B

*The Z component has been corrected for any spurious contribution from S/C. The X and Y components are corrected for any similar effect when in detail mode (IK=0). No correction has been made on the X or Y components when in average mode (IK=1).

**Some uncertainty (usually < 5 degrees) in this angle is possible when in average mode due to reasons explained in above footnote.

```
1      PROGRAM HELCNV
2      C ***
3      C * THIS PROGRAM CONVERTS A HELIOS A,B TAPE FROM IBM BINARY TO ASCII
4      C ***
5      INTEGER*2 QNUM,INDEX(7)
6      DIMENSION BUF(20,400),IBUF(20,400)
7      DIMENSION ASCBUF(15,400)
8      LOGICAL POPT
9      EQUIVALENCE(IBUF,BUF)
10     DATA INDEX/8,9,10,11,12,13,16/
11     IFIRST = 1
12     1 CONTINUE
13     NREC = 0
14     NRECW = 1
15     5 CONTINUE
16     NREC = NREC + 1
17     CALL READT(IBUF,32000,KSTAT)
18     IF(KSTAT) 10,20,
19     LRECL = KSTAT/80
20     GO TO 50
21     10 WRITE(6,5100)NREC,KSTAT
22     GO TO 999
23     20 CONTINUE
24     CALL EOF
25     NREC = NREC - 1
26     NRECW = NRECW - 1
27     NEOF = NEOF + 1
28     WRITE(6,5200)NREC,NRECW
29     IF(NEOF.LT. 2)GO TO 1
30     NRECW = NRECW + 1
31     WRITE(6,5900)NREC,NRECW
32     GO TO 999
33     50 CONTINUE
34     NEOF = 0
35     IF(IFIRST.NE. 1)GO TO 60
36     IFIRST = 0
37     C ***
38     C * FIRST FILE CONTAINS 1 HEADER RECORD
39     C * CONVERT HEADER RECORD TO ASCII AND REDUCE SIZE TO 24000
40     C ***
41     CALL CNVBUFF(IBUF(1,1),ASCBUF(1,1),25600,3)
42     NBYTES = 25600
43     GO TO 210
44     50 CONTINUE
45     C ***
46     C * DATA FILE
47     C * CONVERT FROM IBM 3081 TO MODCOMP BINARY
48     C ***
49     DO 200 J = 1,LRECL
50     DO 100 I = 1,7
51     BUF(INDEX(I),J) = A360(BUF(INDEX(I),J))
52     100 CONTINUE
53     C ***
54     C * CONVERT FROM MODCOMP BINARY TO ASCII
55     C ***
56     ENCODE(64,5000,ASCBUF(1,J),QNUM,ERR=700)IBUF(1,J),IBUF(4,J),
57     IBUF(3,J),(IBUF(I,J),I=5,7),
58     (BUF(I,J),I=8,13),IBUF(15,J),
```

```
59      *                                BUF(I6,J)
60      C ***
61      C * CONVERT SPACECRAFT ID TO ASCII AND MOVE INTO OUTPUT BUFFER
62      C ***
63      CALL CNVBUF(IBUF(2,J),ISP,4,3)
64      CALL MOVECH(ISP,1,ASCBUF(1,J),1,1)
65      IF(POPT(0))WRITE(6,5120)(ASCBUF(I,J),I=1,16)
66      200 CONTINUE
67      NBYTES = LRECL*64
68      210 CALL HWRITE(ASCBUF,NBYTES,IERR)
69      IF(IERR.NE.0)GO TO 800
70      WRITE(6,*)NREC,NRECW,KSTAT,NBYTES
71      NRECW = NRECW + 1
72      GO TO 5
73      700 CONTINUE
74      WRITE(6,5700)NFILE,NREC,QNUM
75      IF(POPT(0))WRITE(6,5120)(ASCBUF(I,J),I=1,15)
76      GO TO 999
77      800 CONTINUE
78      WRITE(6,5800)NFILE,NREC
79      999 CALL INREW
80      CALL EOF
81      CALL EOF
82      CALL OUTREW
83      9999 STOP
84      5000 FORMAT(1X,I1,I1,I2,I3,2I2,4F7.2,2F6.2,I5,F7.2)
85      5100 FORMAT(' ERROR DETECTED READING FILE,RECORD#,3(1X,I6))
86      5120 FORMAT(1X,15A4)
87      5200 FORMAT(' EOF DETECTED, ', ' READ=',I6,' WRITTEN=',I6)
88      5700 FORMAT(' ENCODE ERROR,FILE,REC,QNUM',3(1X,I5))
89      5800 FORMAT(' ERROR DETECTED WRITING FILE,RECORD#,2(1X,I5))
90      5900 FORMAT(' EOF DETECTED, TOTAL FILES READ',I6,/,
91      *          ' TOTAL RECORDS READ ',I6,/,
92      *          ' TOTAL RECORDS WRITTEN ',I6)
93      END
TOTAL RECORDS WRITTEN = 94/ 11
ASS LO LO
```

HELIOS A
D-45444
C-21662
12/15/74 - 12/14/77

RECORD 1 OF FILE 1
LENGTH = 32000 BYTES

TABL E OF SYN BOLS

4040404C	4C404040	40404040	40404040	40404040	40404040	E3C1C2D3	C540D6C5	40E2F8D4	C2D6D3E2
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F0F0F0
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F0F0F2
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F0F0F4
CSD24040	40407E40	F040C6D6	D940C4C1	E3C140E3	C1D2C5D5	40C1E340	C2C9E340	D9C1E3C5	40E440D6
D5407E40	F2F5F640	C2D7E240	40C4C5E3	C1C9D340	D4D6C4C5	5D404040	40404040	F0F0F0F0	F0F0F0F0
40404040	40407E40	F140C1E3	40C2C9E3	40D9C1E3	C5404C40	D6D9407E	40F1F2F8	40C2D7C2	404DC1E5
C5D6C1C7	C540D4D6	CAC55D40	40404040	40404040	40404040	40404040	40404040	F0E0F0F0	F0E0F0F0
C6C5D340	40407E40	C5C1D4C5	40D6C640	E261C368	40C140D6	D540C240	40404040	40404040	40404040
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F0F0F0
C9F8E24C	40407E40	E8C5C1D9	40E6C9E3	C240C6C9	D9E2E340	E3E6D840	C4C9C7C9	E3E240F2	E4D7D7D5
C5E2E2C5	40404040	40404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F1F0F0
C9F3C9D7	D6407E40	D8E4C1D3	C9E3E840	C9D5C6D6	D9D4C1E3	C5D6D540	4040F040	C6D6D940	C7D6D6C4
40C4C1E3	C16B40F1	40C6D6D9	40C4D6E4	C2E3C6E4	D340C4C1	E3C140E3	40404040	F0F0F0F0	F0F1F1F0
C9C4C440	40407E40	C4C1E840	40D1C1D5	4B40F140	7E40C4C1	E840F15D	40404040	40404040	40404040
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F1F2F0
C5C8C840	40407E40	C8D6E4D9	40404040	40404040	40404040	40404040	40404040	40404040	40404040
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F1F3F0
C9D4D440	40407E40	D4C9D548	40404040	40404040	40404040	40404040	40404040	40404040	40404040
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F1F4F0
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E740404C	40407E40	E7E2C540	C6C9C5D3	C440C3D6	D4D7D6D5	C5D5F340	40C9D540	C5C3D3C9	D7E3C9C3
F640D6C5	C9C5E5F3	C5C440E3	D6E6C1D9	C440F2F4	D55D4040	40404040	405D4040	F0F0F0F0	F0F1F6F0
F8404040	40407E40	E8E2C540	40407F40	40404040	40407F40	40404040	40C9D540	C5C3D3C9	D7E3C9C3
6B40D7C5	D9D7C5D5	C4C9C3E4	D3C1D940	E3D640E7	E2C56B40	C1D5C440	40404040	F0F0F0F0	F0F1F7F0
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	C5D5E3C5	C440D6D7
D7D6E2C9	E3C540E3	D640E3C8	C540C5C1	D9E3C8D7	E2404040	40404040	40404040	F0F0F0F0	F0F1F8F0
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40E5C5D3	D6C3C9E3
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F1F9F0
E5404040	40407E40	E5E2C540	40407F40	40404040	40407F40	40404040	40404040	D7C5D5C4	C9C3E4C3
C1C5A0E3	D640C5C3	D3C9D7E3	C9C3E840	D6D9C9C5	D5E3C5C4	40404040	40404040	F0F0F0F0	F0F2F0F0
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40C3C5D3	C5F2E3C9
D6D5E3C8	E6C1D9C4	5D404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F2F1F0
C2404040	40407E40	E2D8D9E3	4040E7F2	C5E6E5C5C	F24E4CE8	E2C5E5C5	5CF24E4C	F0E2C5E5	5C5CF25D
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C340404C	40407E40	C5D3C5E5	C1E3C5D6	D540C1D5	C7C3C540	D6C640E3	C8C540F5	C5C3F3D6	D940C240
D6F5C5D9	40C5C3D3	C6D7E3C9	C34B4040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F2F3F0
D7C84040	40407E40	D3D6D5C7	C9E3E4C4	C540D6C6	40C2404D	D7C8407E	40F040E3	D6F6C1D9	C440E3C8
C540E2F4	D6E8E5E0	40C4C5C7	4040C1D3	D6D5C740	E8E2C5D5	40404040	40404040	F0F0F0F0	F0F2F4F0
C2C24040	40407E40	C1E5C5D9	C1C7C540	D6C640C9	D5C4C9E5	C9C4E4C1	D340E5C5	C3E3D6D9	E240C240
40C5D6E3	40C1E5C1	C9D3C1C2	D3C540E8	C5E36B40	C1F340D7	D9C5F2C5	D5E34040	F0F0F0F0	F0F2F5F0
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040
40C9E340	C5E240D7	E4E3407F	40F04BF0	5D404040	40404040	40404040	40404040	F0F0F0F0	F0F2F6F0
C5404040	40407E40	D5E4D4C2	C5D940D6	C640C9D5	C4C9E5C9	C4E4C1D3	40E5C5C3	E3D6D9E2	40C9D540
C5C1C3C8	40C1E5C5	D9C1C7C5	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F2F7F0
E5F14040	40407E40	E2E3C1D5	C4C1D9C4	40C4C5E5	C9C1E3C9	D6D540D6	D540C240	40404040	40404040
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F2F8F0
E5F24040	40407E40	E2E3C1D5	C4C1D9C4	40C4C5E5	C9C1E3C9	D6D540D6	D540C2C2	4040D5D6	E340C1E5
C1C9D3C1	C2D3C540	E8C5F368	40C1E340	D7D9C5E2	C5D5F340	40404040	40404040	F0F0F0F0	F0F2F9F0
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040
D7F4E340	7E40F04B	F05D4040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F3F0F0
D5D74040	40407E40	D7D9D6C7	D9C5E2F2	C9E5C540	D3C9F2E3	40D5E4D4	C2C5D540	40404040	40404040
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F3F1F0
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F3F2F0
40405C40	5D40407E	4040E3C8	C540E940	C3D6D4D7	D6D5C5D5	E340C8C1	E240C2C5	C5D540C3	D6D9D9C5
C3E3C5C4	40C6C6D9	40C1D5E8	40E2D7E4	D9C9D6E4	F2404040	40404040	40404040	F0F0F0F0	F0F3F3F0
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E3C5C440	C6D6E540	C1D5E840	E2C9D4C9	J3C1D540	40404040	40404040	40404040	F0F0F0F0	F0F3F5F0
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C7E440E0	5D4B40D5	D640C3C6	D9D9C5C3	E3C9D6D5	40404040	40404040	40404040	F0F0F0F0	F0F3F6F0
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	6B40F840	C3D6D4D7
C4D5C5D5	E2E240E6	C8C5D540	E9D540C1	E5C5D9C1	C7C54040	40404040	40404040	F0F0F0F0	F0F3F7F0
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040
40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	F0F0F0F0	F0F3F8F0
C405C5C	405D407E	4040E2C6	D4C54C54	D5C3C5D9	E3C1C9D5	E3E8404D	F4E2E4C1	D3D3F840	4C40D6D5
40C7E40FE	40C4C5C7	D9C5C5E2	5D40C9D5	40E3C8C9	F2404040	40404040	40404040	F0F0F0F0	F0F3F9F0

1 RECORD IN FILE 1 CF TAPES

$$\frac{118}{76} - \frac{1246}{77}$$

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[illegible]

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C0000000	C2404040	00000000	00000000	C00001EA	C0000000	C0000000	4157851E	C11EE147
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4130A3D7	C175EE85	42A1E333	00000000	C00004FC	4135EE5E	C0000000	00000000	00000000
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413851EE	C214CF5C	418CF5C2	00000000	C00004FC	40CF5C28	C0000000	00000000	00000000
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414E551E	C0EAE146	41C451EB	00000000	C00004FC	4110C7A3	C0000000	00000000	00000000
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DAY 365