TIC 229452949

Originated 2025 November 27

Updated 2025 November 28

Reissued 2026 March 7

Introduction

Please note that this is the first time an alert of this kind had been circulated so if you have any comments, please help us to climb the learning curve.

While analysing data obtained by the Transiting Exoplanet Survey Satellite (TESS) an object was discovered which might be a new exoplanet. Observations of this object are urgently required to confirm if this might be so.

Observations using blue and red filters would help to determine whether or not this object is an exoplanet or eclipsing binary. A significant difference would indicate the latter.

Although this is not an ExoClock object HOPS can be used to analyse observations. HOPS output can be input to the AAVSO database but please contact Dennis Conti at dennis@astrodennis.com if you wish to do so.

A temporary name has been assigned to reflect the involvement of the EXPLORE 2000 project

Object data

Planet	RA Dec	V mag	Transit Depth (mmag)	Period (days)	Min telescope aperture required
EXPLORE-1b (TIC 229452949)	19:37:36.32 +63:51:22.1	11.27	22.9	6.142697	~6 ins/15 cms

System data

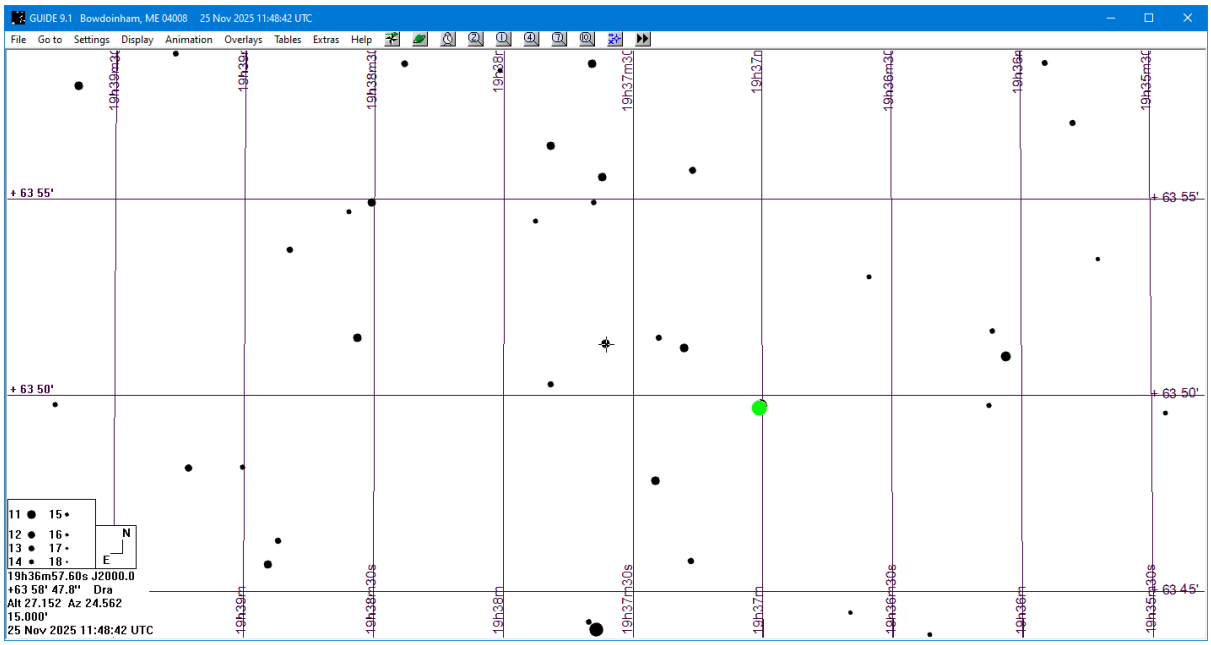
Planet radius (LcTools); 33.32 Earths = 33.32 x 6378 = 212,515 km

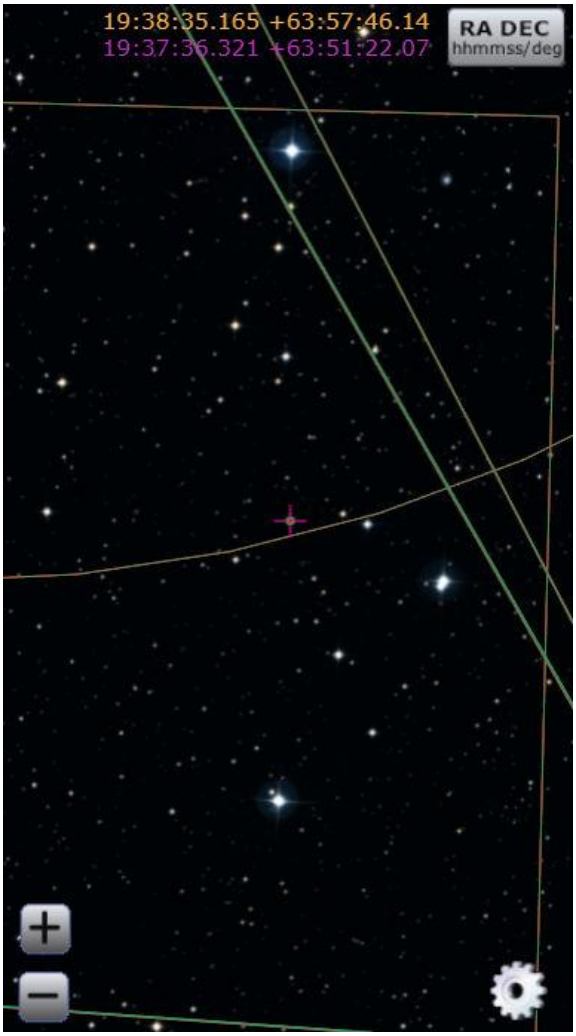
Planet radius (Exoplanetpie); 2.8 Jupiters = 2.8 x 71,492 = 200,178 km

Stellar radius; 2.138 Sun = 2.138 x 69,265 = 1,488,615 km

Planet radius;	0.13 stellar radii
Transit Duration (Exoplanetpie);	4.8 hrs
Period (LcTools);	6.142697 days

Finder charts from Guide and MAST. TIC 229452949 is located in the centres of the charts. In the MAST chart the lower RA/Dec line indicates the target coordinates.





Nearby stars of similar magnitude from Vizier. The target star, EXPLORE-1b (TIC 229452949), is at the top of the list.

RA (dig)	Dec (deg)	RA hr min sec	Dec deg min sec	V mag
294.401305	+63.856140	19 37 36.31	+63 51 22.1	11.27
294.354121	+63.798238	19 37 24.99	+63 47 53.7	11.04
294.454919	+63.940472	19 37 49.18	+63 56 25.7	11.15
294.325936	+63.854595	19 37 18.22	+63 51 16.5	11.17
294.628495	+63.916048	19 38 30.84	+63 54 57.8	11.34
294.641363	+63.859002	19 38 33.93	+63 51 32.4	11.35
294.405088	+63.927205	19 37 37.22	+63 55 37.9	11.37

294.319786	+63.763918	19 37 16.75	+63 45 50.1	12.14
294.317899	+63.929952	19 37 16.30	+63 55 47.8	12.37
294.454483	+63.839494	19 37 49.08	+63 50 22.2	12.72
294.349838	+63.859020	19 37 23.96	+63 51 32.5	12.85

Ephemeris

Observers should use the Swarthmore or TESS transit finders to determine times for their location.

Swarthmore example

Target list

Choose ‘Single object with given ephemeris (date and elevation filters below still apply).’

Observatory

Choose ‘Manual coordinate entry’ at end of list then ‘Enter specific latitude/longitude/time zone’

Enter the required data

RA; 19 37 36.31

Dec; +63 51 22.1

BJD of mid transit; 2458689.2919380 (last TESS observation in LcTools)

Period (days); 6.1426970 (from LcTools)

Transit duration (hrs); 4.8 (from Exoplanetpie)

Transit depth (ppt); 22.9 (from LcTools)

Target name; TIC 229452949

Select; ‘Use observatory’s local time’

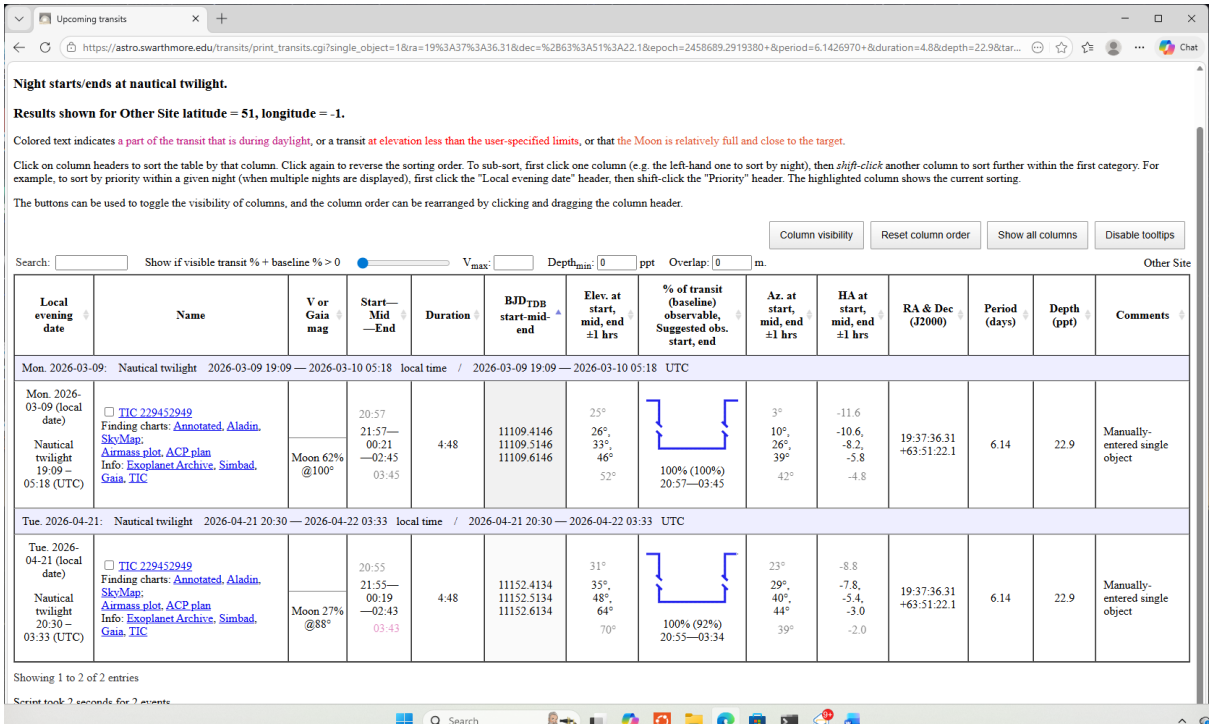
Enter Your observatory location and time zone

Enter elevation constraints – suggest 20 plus ‘And’

Submit

Screen shot of results below (based on location of Hampshire Astronomical Group’s observatory at Clanfield, Hampshire, England

Note that the next predicted transits are 2026 March 9 and 2026 April 21



Night starts/ends at nautical twilight.

Results shown for Other Site latitude = 51, longitude = -1.

Colored text indicates a part of the transit that is during daylight, or a transit at elevation less than the user-specified limits, or that the Moon is relatively full and close to the target.

Click on column headers to sort the table by that column. Click again to reverse the sorting order. To sub-sort, first click one column (e.g. the left-hand one to sort by night), then *shift-click* another column to sort further within the first category. For example, to sort by priority within a given night (when multiple nights are displayed), first click the "Local evening date" header, then shift-click the "Priority" header. The highlighted column shows the current sorting.

The buttons can be used to toggle the visibility of columns, and the column order can be rearranged by clicking and dragging the column header.

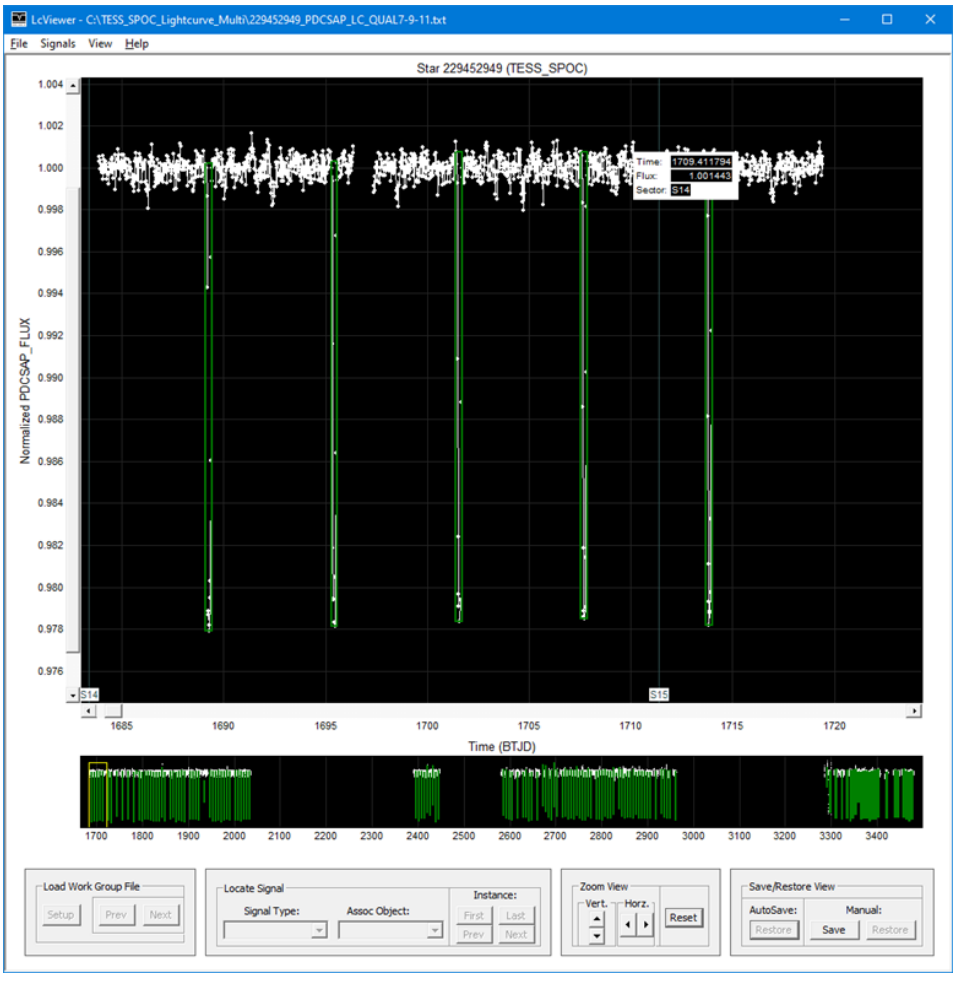
Column visibility | Reset column order | Show all columns | Disable tooltips

Search: | Show if visible transit % + baseline % > 0 | V_{max}: | $Depth_{min}$: 0 ppt | Overlap: 0 m. | Other Site

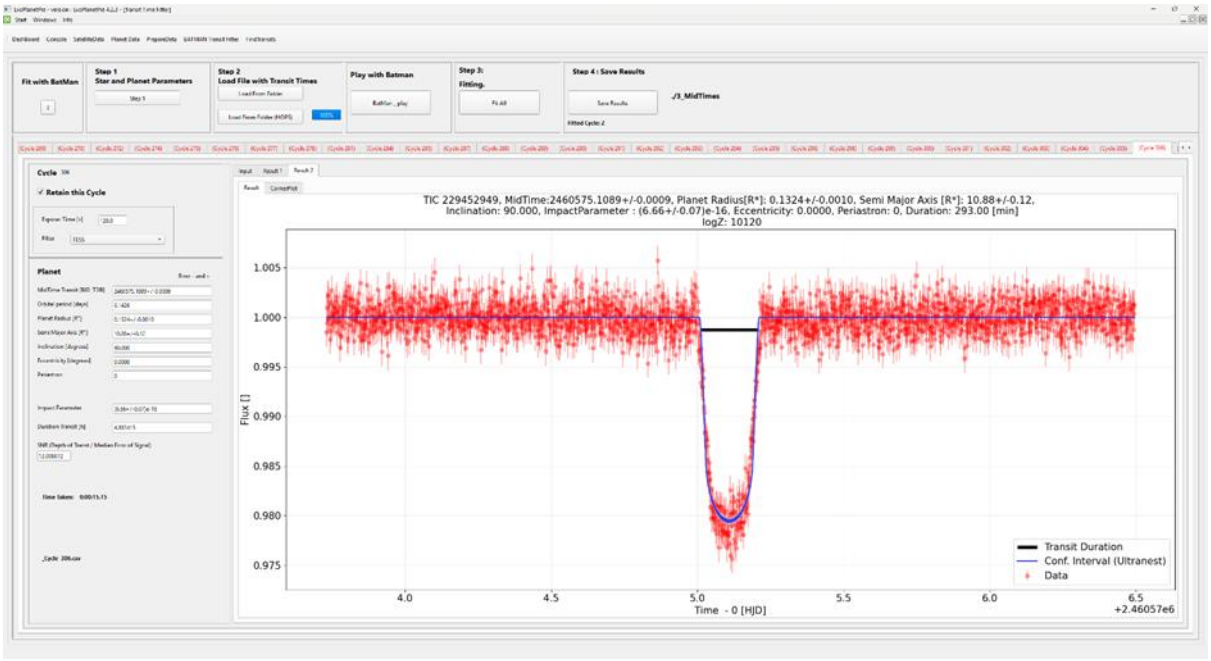
Local evening date	Name	V or Gaia mag	Start—Mid—End	Duration	BJD_{TDB} start-mid-end	Elev. at start, mid, end ±1 hrs	% of transit (baseline) observable, Suggested obs. start, end	Az. at start, mid, end ±1 hrs	HA at start, mid, end ±1 hrs	RA & Dec (J2000)	Period (days)	Depth (ppt)	Comments
Mon. 2026-03-09: Nautical twilight 2026-03-09 19:09 — 2026-03-10 05:18 local time / 2026-03-09 19:09 — 2026-03-10 05:18 UTC													
Mon. 2026-03-09 (local date) Nautical twilight 19:09 – 05:18 (UTC)	TIC 229452949 Finding charts: Annotated, Aladin, SkyMap; Airmass plot, ACP plan Info: Exoplanet Archive, Simbad, Gaia, TIC	Moon 62% @100°	20:57 21:57— 00:21 —02:45 03:45	4:48	11109.4146 11109.5146 11109.6146	25° 26°, 33°, 46° 52°	100% (100%) 20:57—03:45	3° 10°, 26°, 39° 42°	-11.6 -10.6, -8.2, -5.8 -4.8	19:37:36.31 +63:51:22.1	6.14	22.9	Manually-entered single object
Tue. 2026-04-21: Nautical twilight 2026-04-21 20:30 — 2026-04-22 03:33 local time / 2026-04-21 20:30 — 2026-04-22 03:33 UTC													
Tue. 2026-04-21 (local date) Nautical twilight 20:30 – 03:33 (UTC)	TIC 229452949 Finding charts: Annotated, Aladin, SkyMap; Airmass plot, ACP plan Info: Exoplanet Archive, Simbad, Gaia, TIC	Moon 27% @88°	20:55 21:55— 00:19 —02:43 03:43	4:48	11152.4134 11152.5134 11152.6134	31° 35°, 48°, 64° 70°	100% (92%) 20:55—03:34	23° 29°, 40°, 44° 39°	-8.8 -7.8, -5.4, -3.0 -2.0	19:37:36.31 +63:51:22.1	6.14	22.9	Manually-entered single object

Showing 1 to 2 of 2 entries

Script took 2 seconds for 2 events



LcTools chart showing multiple transits



ExoPlanetPie chart by Pieter Vulysteke showing a single transit