Terranim (etc.) to T2 'chan' file

From Terranim etc. -

Camera X (CX)	Camera Y (depth)	Camera Z (height) (CZ)
Target X (TX)	Target Y (depth)	Target Z (height) (TZ)
Bank angle α		

To T2 'chan' –

swapped for T2

Camera X	Camera Z (height)	Camera Y (depth)	ASIN (TZ-CZ / ψ)	ASIN (TX-CX / λ)	Bank angle α

where $\psi = \sqrt{(T\mathit{Z}\text{-}C\mathit{Z})^2 + (T\mathit{X}\text{-}C\mathit{X})^2}$
and $\lambda = \sqrt{(T\mathit{Y}\text{-}C\mathit{Y})^2 + (T\mathit{X}\text{-}C\mathit{X})^2}$

Basic T2 mono to T2 stereo (height becomes 'Y', depth 'Z')

Mono (left) eye –

Camera X	Camera Y (height)	Camera Z (depth)
Elevation ω	Heading θ	Bank angle α

Right eye -

Camera X + ((COS θ) d)	Camera Y + ((SIN α) d)	Camera Z – ((SIN θ) d)
Elevation ω	Heading θ	Bank angle α

where 'd' = camera separation distance

T2 clip to Terranim etc.

Camera X	Camera Y (height)	Camera Z (depth)
Elevation ω	Heading θ	Bank angle α

Swapped for Terranim etc.

Camera X (CX)	Camera Z (depth)	Camera Y (height) (CY)
CX + ((SIN θ)(τ))	CZ + ((COS θ)(τ))	CY + ((SIN ω)(σ))
Bank angle α		

where $\sigma = \sqrt{(T\mathit{Y}\text{-}C\mathit{Y})^2 + (T\mathit{X}\text{-}C\mathit{X})^2}$
and $\tau = \sqrt{(T\mathit{Z}\text{-}C\mathit{Z})^2 + (T\mathit{X}\text{-}C\mathit{X})^2}$

Variables

In all of the above conversions –
ω = elevation angle (+ve above horizon, -ve below in T2, applies to 'old' system indirectly via conversion)
θ = heading angle (clockwise +ve in T2, applies to 'old' system indirectly via conversion)
α = bank angle (clockwise -ve in T2 and 'old' system)

The 'old' system used six coordinates (3 for camera position, three for target) and a bank angle. T2 uses 3 camera positions, and angles of elevation, rotation and banking. Moving from 'old' to T2, the Y and Z coordinates are swapped (Z is height in the 'old' system, Y is height in T2).

T2 negates certain values in the import process – columns 3, 5 and 6 of a 'chan' file. The Excel formulae need to take account of this. Also, 'chan' .txt imports ok but T2 doesn't always show the 2nd three (camera angle) coordinates although these animate ok.

NB: The two pairs of variables ψ,λ and σ,τ appear to represent the same coordinate values but they do not as the 'Y' and 'Z' coordinates are swapped between T2 and other software such as Terranim, Camera Path Editor and Stereoscopic etc.