Solve

$$
\begin{pmatrix}
A_{12} & A_{13} & 0 & 0 & 0 & \dots \\
A_{21} & A_{22} & A_{23} & 0 & 0 & \dots \\
0 & A_{31} & A_{32} & A_{33} & 0 & \dots \\
\dots & \dots & \dots & \dots & \dots & \dots \\
0 & 0 & 0 & A_{N-1,1} & A_{N-1,2} & A_{N-1,3} \\
0 & 0 & 0 & 0 & A_{N,1} & A_{N,2}
\end{pmatrix}
\begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ \dots \\ x_N \end{pmatrix}
=
\begin{pmatrix} b_1 \\ b_2 \\ b_3 \\ \dots \\ b_N \end{pmatrix}
$$

by eliminating upper diagonal and back substituting.

```
!****************************************
 SUBROUTINE TDAG(a,b,N)
!****************************************
   REAL :: A(N,3),b(N),x(n)
!----
! eliminate A(*,3)
!----
 DO i=N-1,1,-1
    fac    = A(i,3)/A(i+1,2)
    A(i,2) = A(i,2)-fac*A(i+1,1)
    b(i)   = b(i)-fac*b(i+1)
 ENDDO
!----
! Now A is lower triangular.  Back substitution
!----
  x(1)    = b(1)/A(1,2)
 DO j=2,N
    x(j) = (b(j)-A(j,1)*x(j-1))/A(j,2)
 ENDDO

 RETURN
 END
```