ACT Traffic Signals Presentation

SMUG, February 2026, Sydney

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Our Team

- Director, Traffic Signals
- Team Leader, Traffic Signals
- 2 Traffic Signals Officers
- Team Leader, Intelligent Traffic Systems
- 2 Traffic Systems Technical Officers
- 2 TMC Operators

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ACT Traffic Signals & ITS Device Population

- 356 Signalised Intersections
- 38 Mid Block Pedestrian Sites
- 6 Signalised Roundabouts
- 6 “Wig Wag” Pedestrian Sites
- 145 Permanent Traffic Monitoring CCTV
- 2 “Rapid Deployment” Portable CCTV
- 5 Permanent VMS
- 9 Portable VMS, 5 with CCTV
- 268 Bluetooth Sniffers for the Addinsight Travel Time System

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Traffic Signal Controller Status

- Only 3 PSC controllers remain in service. All other controllers are ATSC4 or Eclipse.
- In the process of installing a Swarco controller for evaluation purposes.
- 40% of our sites have UPS backup.
- ICUPS controllers have proven to be very economical, especially under a refurbishment program we arranged with the manufacturer.
- All new sites or sites undergoing major reconstruction are provided with UPS & ELV lanterns

ACT Traffic Signals Systems

SCATS, supported by Streams (currently considering Streams refresh or replacement)

Genetec CCTV system

Addinsight Travel Time System

ACT Traffic Signal Communications

- Currently abandoning ADSL services
- 275 Sites on 4G wireless, predominantly Telstra and a small number with Optus Currently in transition from Telstra "Blue Box" to "Black Box" modems
- 125 Sites on ACT Government Fibre Network
- 4 Sites on NBN
- 2 remote sites on Starlink

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Canberra Light Rail Network

- Light Rail Stage 1 Gungahlin to City) opened 2019 – 12 km, 14 LRV's
- High priority provided to LRV's through T-Visor interface at 27 intersections.
- Light Rail Stage 2a presently under construction – City to Lake Burley Griffin – 1.7km, 7 signalised intersections, 5 additional LRV's
- Light Rail Stage 2b in concept design – Lake Burley Griffin to Woden

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Roads ACT Traffic Management Centre

Open 7am – 7pm
weekdays

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Improvement Programs

- Development and implementation of ACT specific Standard Tables to streamline our personality development
- Light Rail personality upgrades to VC6.2 including rationalisation of code and providing priority under isolated operation during communication outages
- Adoption of a Type Acceptance Register to provide a nimble means of accepting suitable Traffic Signal & ITS equipment for use
- Updating and expansion of Traffic Signal Design and Construction Standards to provide clarity to Designers and Contractors
- Adoption of post mounted detectors for detector failures, bus jumps and bicycle detection

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Challenges

- Lack of experience in Industry – poor design, safety and efficiency outcomes
- Lack of traffic signal and modelling knowledge in internal Development Assessment processes
- Significant workload – Light Rail, accelerated development
- Addressing progression planning for retirement and attrition
- “Form over Function” impacting safety, efficiency and maintenance

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Thank You

Personality Generation Practices adopted in the ACT

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Historical personalities in the ACT

- Personalities dating back to the early 90s, perhaps earlier.
- Custom code usage.
- Documentation issues.
- Resilience in personality software.

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Canberra Light Rail Personalities

- Originally written in VC5.
- Used up to 45 flags for light rail functionality.
- Developed on top of existing personalities.
- Inconsistent operation.


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FDB INAG,NSG7R,LSEXT,SGM7TO,FLG45,NFLG61
FDB STOREF,27                    *VCOM1 inactive, initiate Amber

FDB FLG27
FDB STOREF,17                    *LRV1 WAS running in THIS phase

FDB INAG,CLEAR1,NFLG31               *All Clear - Expire All Red - LRV1 if all
FDB STOREF,21

FDB CLEAR1
FDB BITSB,$04,S9TO16-RAM                 *Set Miscelanious Status Bit MSS 11 (C
FDB ELSE
FDB BITCB,$04,S9TO16-RAM                 *Clear Miscelanious Status Bit MSS 11

FDB FLG21,NFLG61,SPTMR5TO                *SBD LRV hitting Cancel Loop in Normal
FDB EXPIRE,TIMER1-RAM
FDB EXPIRE,SPTMR3-RAM
FDB EXPIRE,SP3T-RAM
FDB EXPIRE,SPTMR1-RAM

FDB FLG43,OR                     *Critical timers expire before the SBD delay t
FDB NINAG
FDB EXPIRE,SPTMR5-RAM

FDB SG7R
FDB EXPIRE,SPTMR3-RAM                *Expire Protected SG7 Max Green Timer

FDB SG7G,SGM7TO,FLG21,NFLG61,OR          *Start VCOM1 failure CLOSE timer
FDB SG7G,TMR1TO,SPTMR3TO,SGM7TO
FDB STOREF,51                    *Initiate Amber
FDB STOREF,53                    *Auxiliary Flag (stays till the end of phase)

FDB INAG,FLG27,SG7R,SM7TI                *Clear Demand/Depature Flags for LRV1
FDB NTSTIM,SM7T,TSM7,OR              *TSM7 = TSREDC by substitution
FDB INAG,FLG51,SG7R,SM7TI                *Using Expiry of the 1st Stage of the
FDB NTSTIM,SM7T,TSM7                 *TSM7 = TSREDC by substitution
FDB CLEARF,25
FDB CLEARF,35
FDB CLEARF,45
FDB CLEARF,55

FDB FLG31,OR                     *Red light running
FDB CLEAR1,SG7A
FDB CLEARF,35
FDB CLEARF,45
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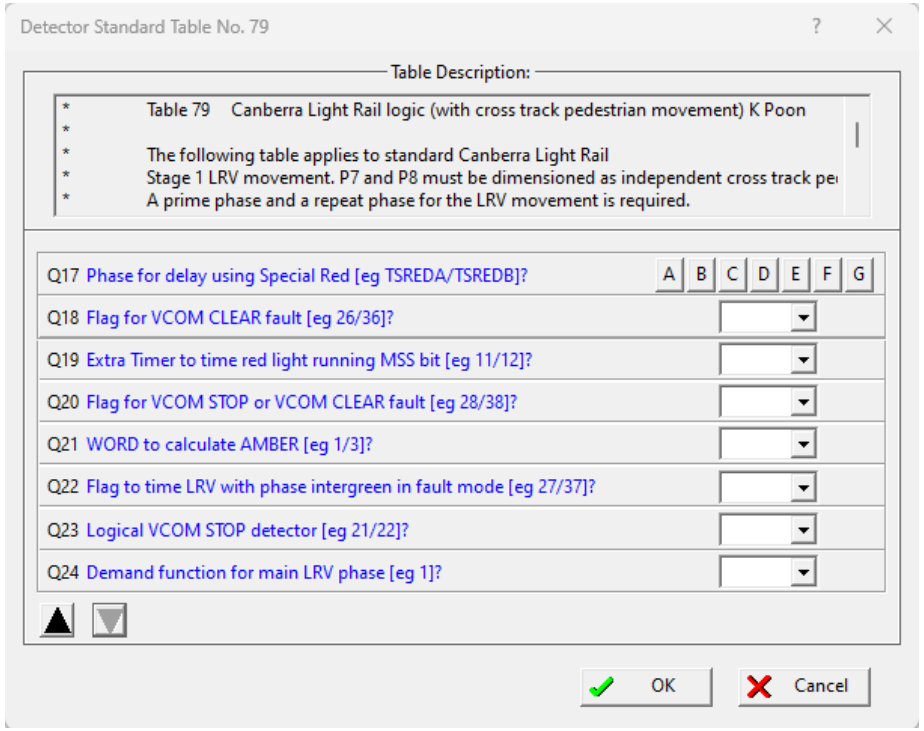
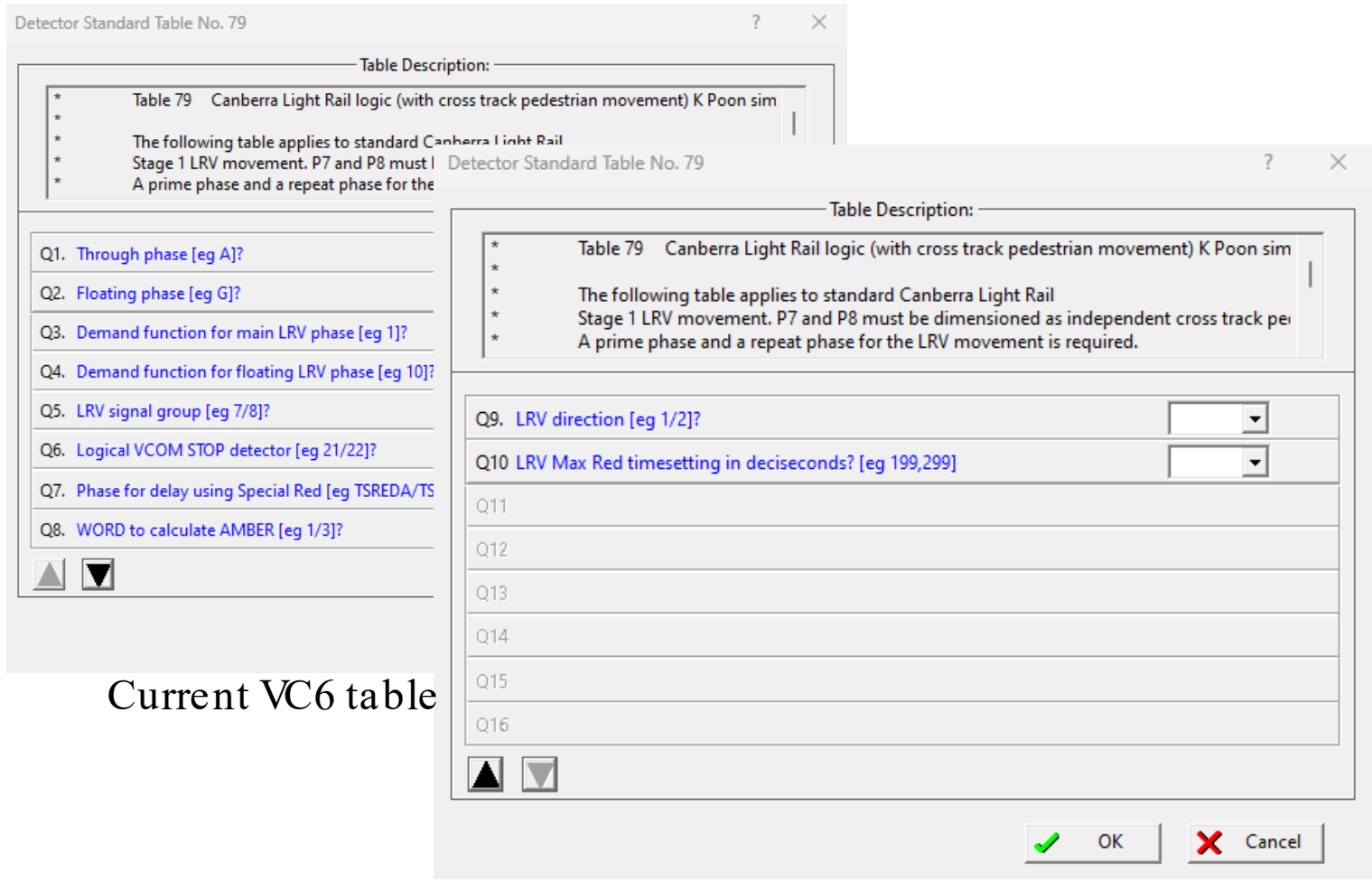
Light Rail Standard Tables

Original VC6 table



Current VC6 table



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ACT Standard Tables

	Canberra Signal Group Logic	UPDATED
Table 25	Updated to ACT Standard By K.Poon	
Table 44	'A' LEFT TURN RED ARROW (ACT Standard Table) K.Poon 07-11-2025	
Table 76	'B' LEFT TURN ARROWS (ACT Standard Table) K.POON 11-11-25	12/11/2025
Table 77	'B/C COND' LEFT TURN ARROWS (ACT Standard Table) K.POON 12-11-25	12/11/2025
Table 97	Canberra LRV 'T' Aspect	16/09/2024
	Used with tables det 79, Grp 98,Ped 79	
Table 98	Canberra LRV Pedestrian Walk Tone	16/09/2024
	Used with tables det 79, Grp 97,Ped 79	
Table 99	B/D Movement with Direct Conflicting Ped OLD	06/10/2023
	ACT 'B/D' THROUGH MOVEMENT DIRECT CONFLICT PED VC6 ONLY(K.POON 03-11-2025)	
Table 108	To be used with 2 aspect shared lane L/T GA adjacent to V1/V2 at SDO	25/06/2025
Table 150	Bus Jump SDO,DDO	19/02/2024
Table 190	Sliplane (3 Aspect)	23/09/2024
	Independent Vehicle Movement Use Ped Table 35	
Table 191	Sliplane (2 Aspect)	15/10/2024
	Independent Vehicle Movement Use Ped Table 35	
Table 200	Single Aspect (Bus Jump)	19/02/2024
Table 182	B/D/E/F/F To Be Reviewed	
Table 105	'B/F/F1' LT Adjacent to V6 - SDO.	18/11/2025
	'C/F/F2' LT Adjacent to V5	
Table 113	'D' LT Adjacent to V1,V2 - SDO. (ACT Standard Table)	18/11/2025

	Canberra Pedestrian Logic	UPDATED
Table 1	NORMAL UNPROTECTED PEDESTRIAN MOVEMENT (ACT Standard Table) 06-11-2025	
Table 2	NORMAL PROTECTED PEDESTRIAN MOVEMENT (ACT STANDARD TABLE) 31-10-2025 K.Poon	
Table 7	PROTECTED PEDESTRIAN OVERLAP MOVEMENT (ACT STANDARD TABLE) 10-11-2025 K.Poon	
Table 79	Canberra Light Rail independent cross track pedestrian	########
	Independent pedestrian crossing, secret to SCATS.	
	To be used with tables: group97, group98, det79	
Table 81	ACT 'B/D' THROUGH MOVEMENT DIRECT CONFLICT PED OLD	Upated 05/02/2025
	ACT 'B/D' THROUGH MOVEMENT DIRECT CONFLICT PED (ACT Standard Table K.Poon 29-10-2025)	
Table 96	PEDESTRIAN OVERLAP MOVEMENT WITH RE-INTRODUCTION THREE PHASE	?
Table 97	PEDESTRIAN OVERLAP MOVEMENT WITH RE-INTRODUCTION TWO PHASE	?
Table 98	NORMAL PEDESTRIAN MOVEMENT WITH RE-INTRODUCTION IN ONE PHASE	?
Table 99	PEDESTRIAN OVERLAP MOVEMENT WITH RE-INTRODUCTION	?
Table 117	Ped Parallel to V1/V2 SDO and DDO with NO conflicting left turn	
	BUS JUMP FOR ACT STANDARD PERSONALITY (K.POON 19-02-2024)	
Table 118	Ped Parallel to V5/V6 DDO with NO conflicting left turn	
	BUS JUMP FOR ACT STANDARD PERSONALITY (K.POON 19-02-2024)	
Table 127	Ped127 to be used in conjunction with Grp108 for P1/P2 at SDO. Ensures correct introduct	
Full protection Shared lane from side Rd	Example Set 322	

	Canberra Detector Logic	
Table 21	Stop line detectors (ACT Standard Table)	12/11/2025
Table 50	UPS Alarm Detectors	
	For ICUPS	
Table 51	UPS Alarm Detectors	
	For ECUPS 6 Inputs	
Table 52	UPS Alarm Detectors	04/09/2025
	For ECUPS 8 Inputs	
Table 53	UPS Alarm Detectors - Light Rail	04/09/2025
	For ECUPS 8 Inputs (uses MSS21-28 due to LR allocation)	
Table 54	Bus Jump For ACT Standard Personality	19/02/2024
Table 55	Variation to det21.tab situations to be used with grp99.tab and ped2.tab	
Table 79	Canberra Light Rail Logic (With Cross Track Pedestrian)	24/09/2024
	P7-P8 must be dimensioned as independent Cross Track Pedestrians	
	Prime and repeat LRV movement is required	
	Used with Groups 97,98 and Ped 79	
Table 80	Detector PB with call ahead logic (T-Intersection)	19/11/2024
	Used with floating phase in SCATS	
Table 81	Detector PB with Extended Protection OLD	17/08/2023
	Detector as Push Button with extended protection (03-11-2025)	03/11/2025
Table 82	Detector as PB (Cross Track Crossing LRV)	29/10/2024
Table 83	*'B/D' THROUGH MOVEMENT DIRECT CONFLICT PED Use with Ped Table 81	05/02/2025
Table 84	ped call ahead (not at T intersections)	05/05/2025

Further changes to ACT Standard Tables

- Vehicle to vehicle conflicts considered separately to vehicle to pedestrian conflicts.
- Reducing inefficiencies at intersections stemming from extended inter-greens due to sub optimal intersection geometry.

CALCULATION OF ALL- RED PERIODS FOR TRAFFIC SIGNALS

PEDESTRIAN TIMINGS

Ped No	Crossing Distance	Main Grn Phase	Other Phases	Speed (m/s)	Walk Time	Clearance 1 Time	Clearance 2 Time
1	25.4	A		1.2	6	17	4.0
2	25.42	A	B/D	1.2	6	17	4.0
3	13.32	C		1.2	6	6	5.0
4	13.12	C		1.2	6	6	5.0
5	16.47	C		1.2	6	9	5.0
6	13.08	B		1.2	6	7	4.0

SUMMARY OF ALL RED TIMINGS

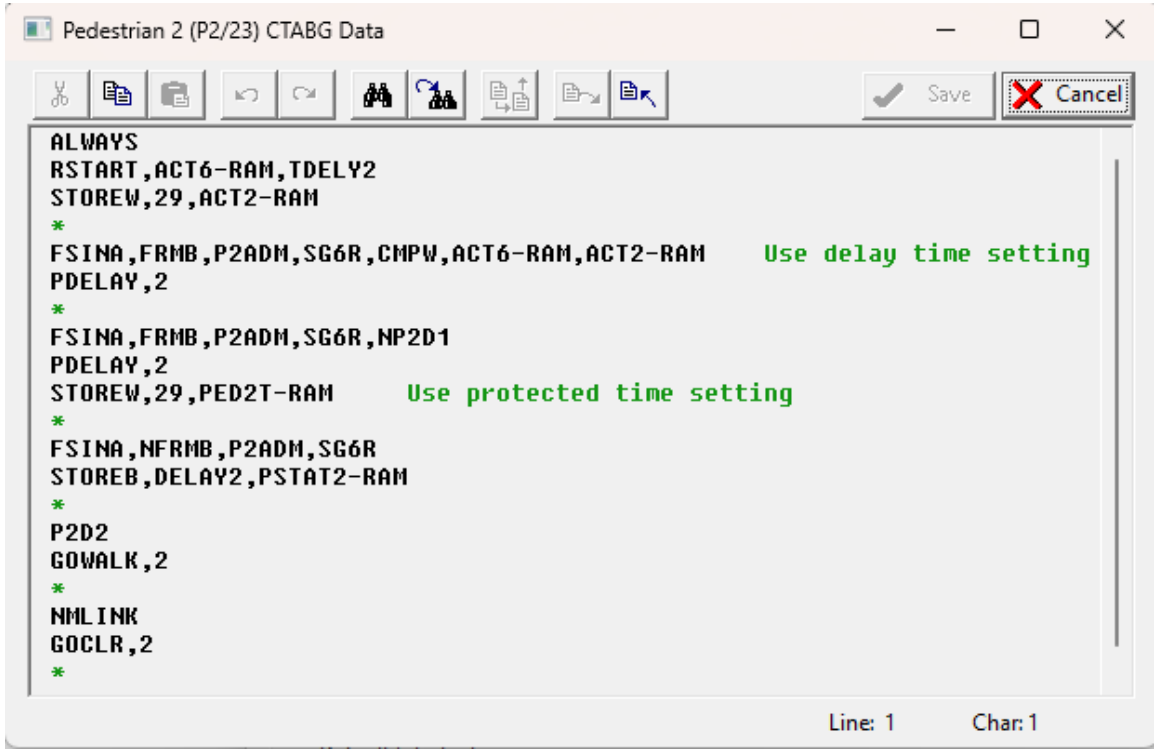
Phase	All-Red Periods:		Speed	Special All-Reds:		When Used	Yellow Time	Intergreen
A	TREDA =	2.0	60	TSREDA =			4.0	6
B	TREDB =	2.0	60	TSREDB =	3.0	To A	4.0	6
C	TREDC =	4.0	40	TSREDC =			3.0	7
D	TREDD =	2.0	50	TSREDD =	3.0	To A	4.0	6

VEHICLE/VEHICLE CONFLICTS

Conflict No.	Green Phase	To Phase	Conflict Description	Moving vehicle conflict (metres)	Stopped vehicle conflict (metres)	Moving vehicle speed (km/h)	Stopped vehicle speed (km/h)	Moving vehicle speed (m/s)	Stopped vehicle speed (m/s)	Initial Red Time	Corrected Red Time
1	A	B,D	SG1 vs SG8	42.0	19.0	60.0	40.0	14.0	11.1	1.3	2.0
2	A	C	SG2 vs SG5	44.0	20.0	60.0	40.0	14.0	11.1	1.3	2.0
3	B,D	A	SG3 vs SG1	59.0	24.0	60.0	60.0	14.0	16.7	2.8	3.0
4	B,D	C	SG3 vs SG5	58.0	52.0	60.0	40.0	14.0	11.1	-0.5	2.0
5	C	A	SG4 vs SG2	50.0	29.0	40.0	60.0	10.0	16.7	3.3	3.5
6	C	A	SG5 vs SG1	53.0	24.0	40.0	60.0	10.0	16.7	3.9	4.0
7	C	B,D	SG4 vs SG3	50.0	29.0	40.0	60.0	10.0	16.7	3.3	3.5

VEHICLE/PEDESTRIAN CONFLICTS

Conflict No.	Green Phase	To Phase	Conflict Description	Moving vehicle conflict with ped (metres)	Moving vehicle speed (km/h)	Vehicle/ Vehicle conflict corrected red time (Q32-Q41)	Moving vehicle speed (m/s)	Ped Delay Time	Corrected Ped Delay Time
1	A,B,D	C	SG2 vs P4	64.0	60.0	2.0	14.0	2.6	3.0
2	A	C	SG1 vs P3	60.0	60.0	2.0	14.0	2.3	3.0
3	C	A	SG5 vs P1	69.0	40.0	4.0	10.0	2.9	3.0
4	C	A	SG4 vs P2	66.0	40.0	4.0	10.0	2.6	3.0
5	B,D	A	SG3 vs P1	74.0	60.0	3.0	14.0	2.3	3.0



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Questions?

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