

January 27, 1997

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: **Docket Nos. 50-361**
Steam Generator Eddy Current Inspection Data
San Onofre Nuclear Generating Station
Unit 2

Reference: January 24, 1997 NRC Meeting Notice for a January 30, 1997 meeting on the San Onofre Unit 2 Steam Generator inspection results.

In response to the meeting agenda attached to the referenced NRC Meeting Notice dated January 24, 1997, this letter provides a copy of the specified eddy current data from some of the steam generator tubes inspected during the current San Onofre Unit 2 refueling outage.

Enclosure 1 provides the raw eddy current inspection data from both the Plus Point and bobbin coil inspections for those tubes that are candidates for in-situ pressure testing or pulling during the current refueling outage. This includes data for at least two crack indications detected at dented locations. Enclosure 1, an optical disc copy of Raw Eddy Current Inspection Data, is being sent to NRC Consultant, Dr. Caius Dodd. Enclosure 2 is the drawings of the standards that were used to calibrate the inspection probes. The data is compatible with EddyNet95.

300016

9701300215 970127
PDR ADOCK 05000361
Q PDR

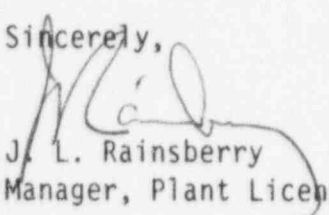
Adol

Document Control Desk

-2-

If you have any questions or need additional information, please call me.

Sincerely,



J. L. Rainsberry
Manager, Plant Licensing

Enclosures

cc: L. J. Callan, Regional Administrator, NRC Region IV
K. E. Perkins, Jr., Director, Walnut Creek Field Office, NRC Region IV
J. A. Sloan, NRC Senior Resident Inspector, San Onofre Units 2 & 3
M. B. Fields, NRC Project Manager, San Onofre Units 2 and 3
C. Dodd, NRC Consultant

bcc: (see attached sheet)

ENCLOSURES

ENCLOSURE 1 (optical disc sent to NRC Consultant, Dr. Caius Dodd)

Raw Eddy Current Inspection Data

San Onofre Unit 2 Steam Generators 88 and 89

Steam Generator 89 Tube Pull Candidates (94-32, 61-111, 16-164)

In-Situ Testing Candidates in both Steam Generators

ENCLOSURE 2

Drawings of the Standards Used to Calibrate the Inspection Probes

Drawing No.	<u>2-415-1015</u> Serial Nos.	<u>2-415-1059</u> Serial Nos.
	Z-15045	Z-15577 Z-15586
	Z-15050	Z-15578 Z-15587
	Z-13325	Z-15579 Z-15588
	Z-13326	Z-15580 Z-15589
	Z-13328	Z-15581 Z-15590
	Z-13329	Z-15582 Z-15591
		Z-15583 Z-15592
		Z-15584 Z-15593
		Z-15585 Z-15594

NOTE: SEE 2-415-0004 FOR PLACEMENT
OF NYLON SLEEVE

				REVISIONS							
				REV	STATUS	LTR	DATE	DESCRIPTION			
				2	SHEET	H	4/5/96	ADDED ORIENTATION FOR SEC. VIEWS			

LOCATION

A B C D E F G H I J K

PHYSICALLY MEAS DPTH

.0195 .0205 — — .0215 THRU THRU .0300 .0100 .0260 .0155

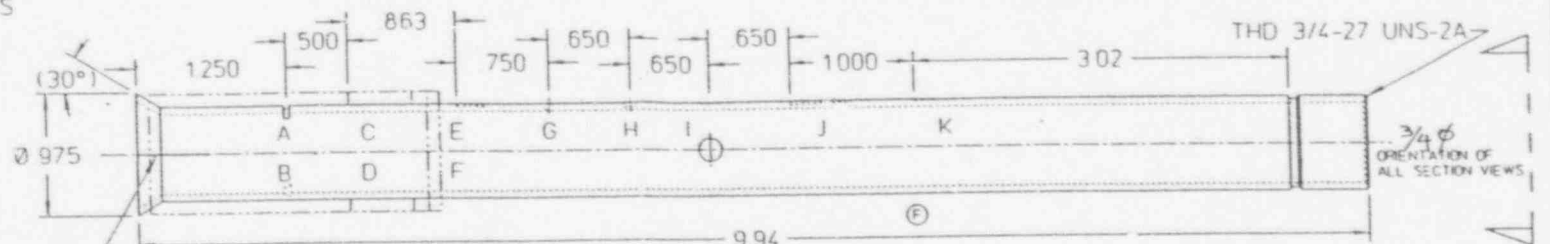
DEPTH IN % OF WALL

39% 41% — — 43% 100% 100% 59% 20% 51% 31%

E.T. PHASE ANGLE MEAS

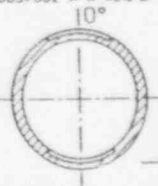
— — — — 40° 110° 151°

DIA OF DEFECT ±.003

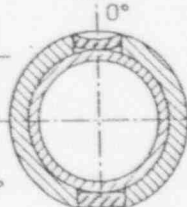


ALIGN ELECTRO-ETCH
AND GROOVES

LOC A
OD CIRC 375 LG X
005+.002 W X 40% DP



LOC C
ADJACENT
TUBE



LOC E
OD AXIAL
005+.002 W X 40% DP

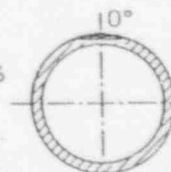
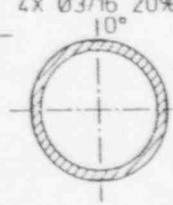


LOC G
0.052 THRU WALL



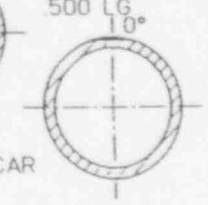
LOC H
07/64 60%

LOC I
4X 03/16 20%

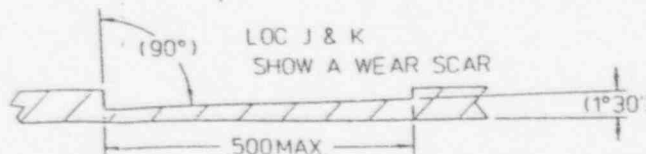


LOC J
50% WEAR SCAR
500 LG

LOC K
30% WEAR SCAR
500 LG



LOC D
BAT WING



MATERIAL INCONEL 600

AVERAGE MEAS WALL THK .0505

NOMINAL WALL THK .049

HEAT LOT NO 752493

TEST FREQ USED 400 KHZ

SERIAL NO Z-15045

P.O. NO 8710

REL NO NA

QUALITY REL NO NA

DATE MFG 5-17-96

O.A. INSP Ray P. [Signature]

CUSTOMER Rockridge Technologies

RECORDED 40

PROBE USED AGILEX # 71186

REVIEWED BY [Signature]

NOTE

UNLESS OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT + 1/16
XXXX + .003
XXX + .015
XX + .050
X + .003
ANGULAR .3°
FINISH

DRAWN
G. MATELICH
CHECK
B. JONES
DESIGN
APVD OA
G. ATKINS

DATE
08/24/94
08/30/94
08/31/94

ZETEC INC.
POST OFFICE BOX 110 ISSAQUAH WASHINGTON
98027-0110 U.S.A. TELEPHONE (206) 382-5336
TITLE
DUAL GUIDE TUBE STD.
W/ MISC. DEFECTS
SIMILAR
DWG NO
2-415-1015
SCALE NTS
JSEU 2-415-0004 SH 1 OF 2

				D	REVISIONS	REV STATUS OF SHEETS	REVISIONS				APVD	CK	DR
				2	SHEET		LTR	DATE	DESCRIPTION				
						H	4/5/16	ADDED ORIENTATION FOR SEC. VIEWS				KZ	

A B C D E F G H I J K

.0200 .0205 — — .0205 IRU IRU .0310 .0100 .0260 .0165

40% 41% — — 41% 100% 100% 61% 20% 51% 33%

40° 111° 153°

Orthographic drawing of a mechanical part. The drawing includes a front view, a top view, and a side view. The front view shows a cylindrical part with a diameter of $\varnothing 975$ and a length of 302. The top view shows a rectangular part with a width of 1250 and a length of 302. The side view shows a rectangular part with a height of 964 and a length of 302. The drawing includes dimensions for various features: 1250, 500, 863, 750, 650, 650, 650, 1000, 302, and 964. The drawing also includes section lines and labels A, B, C, D, E, F, G, H, I, J, K, and L. The drawing is titled "THD 3/4-27 UNS-2A" and "3/4 ϕ ORIENTATION OF ALL SECTION VIEWS".

LOC A
00 CIRC 375 LG X
005+002 W X 40% DP

LOC C
ADJACENT

LOC E
OD AXIAL
005x002 W X 40% DP

LOC 6
0.052 THRU WALL

LOC 1
4X 03/16 20%

LOC K
30% WEAR SCAR
500 LG

LOC B
ID CIRC 375 LG X
005,002 W X 40% DF

LOC F
AXIAL
DCS, DC2 W X 100% DP

LOC D
RAT WING

Diagram illustrating a 90-degree bend in a pipe. The bend is labeled "LOC J & K" and "SHOW A WEAR SCAR". The bend angle is marked as (90°) . The distance from the bend to the wear scar is marked as "500 MAX". The wear scar is located on the outer radius of the bend. The distance from the wear scar to the end of the pipe is marked as $(1^\circ 30')$.

UNLESS OTHERWISE SPECIFIED
 DIM ARE IN INCHES
 TOLERANCES
 DECIMAL FRACTION $\pm 1/16$
 XXXX $\pm .003$
 XXX $\pm .015$
 XX $\pm .050$
 X $\pm .003$
 ANGULAR $\pm 3^\circ$
 FINISH

DRAWN	DATE
G. MATELICH	08/24/94
CHECK	
B. JONES	08/30/94
DESIGN	
APVD. BY	
G. ATKINS	08/31/94

ZETEC INC.		POST OFFICE BOX 110 ISSAQUAH WASHINGTON 98227-0110 U.S.A. TELEPHONE (206) 397-5316	
TITLE		DUAL GUIDE TUBE STD. W/ MISC. DEFECTS	
SIMILAR	DWG NO	2-415-1015	
SCALE	NTS	USED	2-415-0004 SHY 1 OF 2

POST OFFICE BOX 140 ISSAQUAH WASHINGTON
98027-0140 U.S.A. TELEPHONE (206) 397-5336

ZETEC INC.		POST OFFICE BOX 110 ISSAQUAH WASHINGTON 98227-0110 U.S.A. TELEPHONE (206) 397-5316	
TITLE		DUAL GUIDE TUBE STD. W/ MISC. DEFECTS	
SIMILAR	DWG NO	2-415-1015	
SCALE	NTS	USED	2-415-0004 SHY 1 OF 2

ZETEC INC.		POST OFFICE BOX 110 ISSAQUAH WASHINGTON 98227-0110 U.S.A. TELEPHONE (206) 397-5316	
TITLE		DUAL GUIDE TUBE STD. W/ MISC. DEFECTS	
SIMILAR	DWG NO	2-415-1015	
SCALE	NTS	USED	2-415-0004 SHY 1 OF 2

ZETEC INC.		POST OFFICE BOX 110 ISSAQUAH WASHINGTON 98027-0110 U.S.A. TELEPHONE (206) 397-5316	
TITLE		DUAL GUIDE TUBE STD. W/ MISC. DEFECTS	
SIMILAR	DWG NO	2-415-1015	
SCALE	NTS	USED	2-415-0004 SH1 1 OF 2

ZETEC INC.		POST OFFICE BOX 110 ISSAQUAH WASHINGTON 98027-0110 U.S.A. TELEPHONE (206) 397-5316	
TITLE		DUAL GUIDE TUBE STD. W/ MISC. DEFECTS	
SIMILAR	DWG NO	2-415-1015	
SCALE	NTS	USED	2-415-0004 SH1 1 OF 2

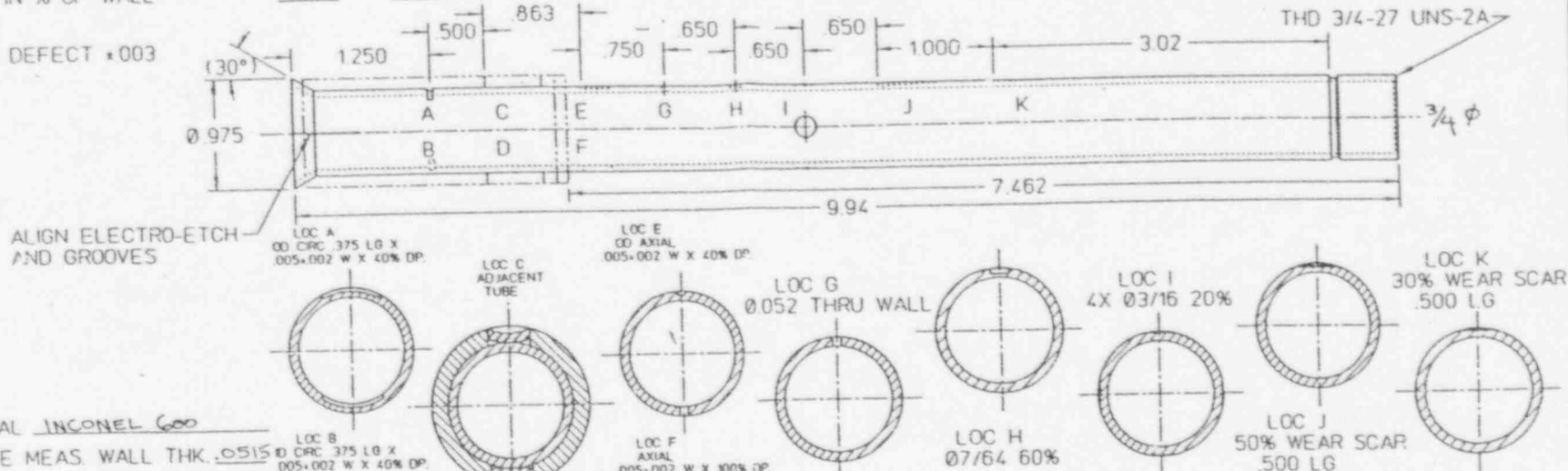
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TITLE		DUAL GUIDE TUBE STD. W/ MISC. DEFECTS	
SIMILAR	DWG NO	2-415-1015	
SCALE	NTS	USED	2-415-0004 SH1 1 OF 2

ZETEC INC.		POST OFFICE BOX 110 ISSAQUAH WASHINGTON 98027-0110 U.S.A. TELEPHONE (206) 397-5316	
TITLE		DUAL GUIDE TUBE STD. W/ MISC. DEFECTS	
SIMILAR	DWG NO	2-415-1015	
SCALE	NTS	USED	2-415-0004 SH1 1 OF 2

ZETEC INC.		POST OFFICE BOX 110 ISSAQUAH WASHINGTON 98227-0110 U.S.A. TELEPHONE (206) 397-5316	
TITLE		DUAL GUIDE TUBE STD. W/ MISC. DEFECTS	
SIMILAR	DWG NO	2-415-1015	
SCALE	NTS	USED	2-415-0004 SH1 1 OF 2

REVISIONS				REVISIONS				APVD	CK	DR
LTR	DATE	DESCRIPTION								
E	11/29/94	ADDED WIDTH CALL-OUT LOC. A-E-F						HA	BT	KZ

LOCATION	A	B	C	D	E	F	G	H	I	J	K
PHYSICALLY MEAS. DEPTH	.0210	.0205	—	—	.0215	THRU	THRU	.0300	.0100	.0240	.0140
DEPTH IN % OF WALL	41%	40%	—	—	42%	100%	100%	58%	19%	47%	27%
DIA OF DEFECT $\pm .003$											



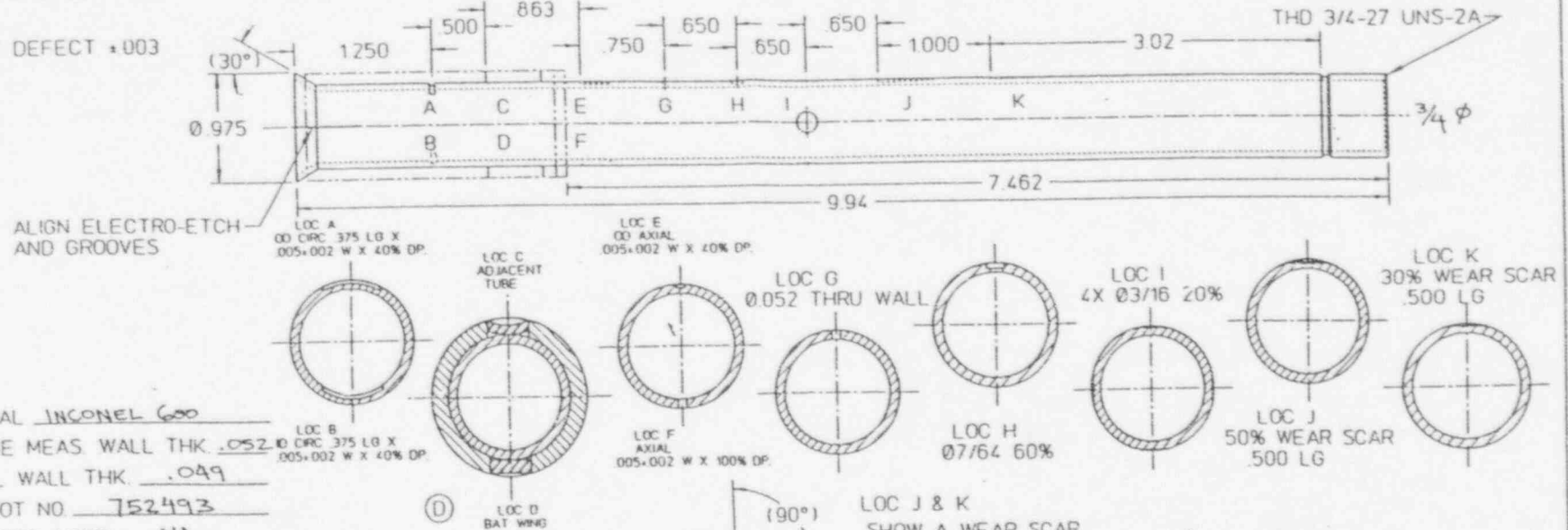
MATERIAL INCONEL 600
 AVERAGE MEAS. WALL THK. .0515
 NOMINAL WALL THK. .049
 HEAT LOT NO. 752493
 TEST FREQ. USED NA
 SERIAL NO. Z-13325
 P.O. NO. 679
 REL. NO. MR5524
 QUALITY REL. NO. NA
 DATE MFG. 2-1-95
 O.A. INSP. HA
 CUSTOMER CONRAD NUCLEAR
 RECORDED NA
 PROBE USED NA
 REVIEWED BY HA

NOTE:

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES TOLERANCES DECIMAL FRACT. $\pm 1/16$ XXXX $\pm .003$ XXX $\pm .015$ XX $\pm .050$ X $\pm .003$ ANGULAR $\pm 3^\circ$ FINISH	DRAWN G MATELICH	DATE 08/24/94	ZETEC INC. POST OFFICE BOX 100 ISSAQUAH WASHINGTON 98027-0100 U.S.A. TELEPHONE (206) 387-5376
	CHECK B JONES	08/30/94	
	DESIGN		
	APVD. OA G ATKINS	08/31/94	
TITLE DUAL GUIDE TUBE STD. W/ MISC. DEFECTS		SIMILAR	DWG NO. 2-415-1015
SCALE NTS		USED ON 2-415-0004	SHT 1 OF 2

				REVISIONS						
				REV	STATUS	DATE	DESCRIPTION	APVD	CK	DR
			C	2	SHEET	11/29/94	ADDED WIDTH CALL-OUT LOC. A-B-E-F	HR	BT	KZ

LOCATION	A	B	C	D	E	F	G	H	I	J	K
PHYSICALLY MEAS'D DEPTH	.0215	.0200	—	—	.0210	THRU	THRU	.0310	.0110	.0260	.0195
DEPTH IN % OF WALL	42%	39%	—	—	41%	100%	100%	60%	21%	50%	28%
DIA OF DEFECT ±.003											



MATERIAL INCONEL 600
 AVERAGE MEAS WALL THK. .052
 NOMINAL WALL THK. .049
 HEAT LOT NO. 752493
 TEST FREQ USED NA
 SERIAL NO. Z-13326
 P.O. NO. 679
 REL. NO. MR5524
 QUALITY REL. NO. NA
 DATE MFG. 2-1-95
 O.A. INSP. Handwritten Signature
 CUSTOMER CONRAD NUCLEAR
 RECORDED NA
 PROBE USED NA
 REVIEWED BY Handwritten Signature

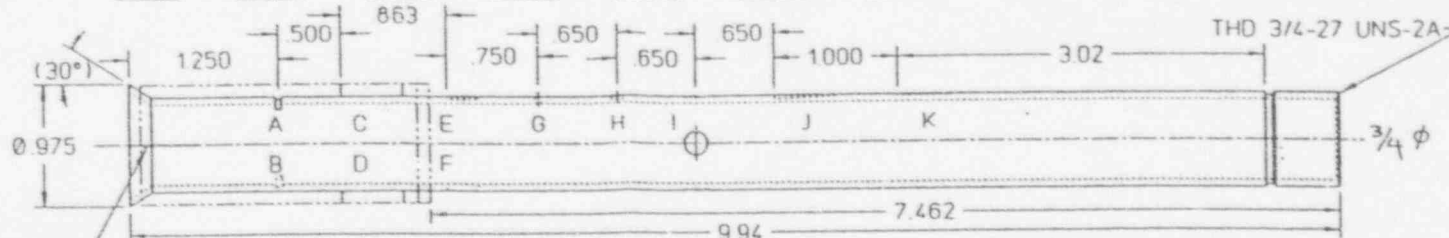
NOTE:

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES TOLERANCES DECIMAL FRACT. ± 1/16 .XXXX ± .003 .XXX ± .015 .XX ± .050 .X ± .003 ANGULAR .3° FINISH	DRAWN	DATE	ZETEC INC POST OFFICE BOX 100 ISSAQUAH WASH-INGTON 98027-0100 U.S.A. TELEPHONE (206) 382-5316	
	G. MATELICH	08/24/94		
	CHECK		TITLE DUAL GUIDE TUBE STD. W/ MISC. DEFECTS	
	B. JONES	08/30/94		
	DESIGN		SIMILAR	DWG NO
	APVD. OA			2-415-1015
	G. ATKINS	08/31/94	SCALE NTS	USED ORN 2-415-0004 SHT 1 OF 2

				REVISIONS				
				REV. STATUS OF SHEETS	LTR	DATE	DESCRIPTION	APVD CK DR
				2 SHEET	E	11/29/94	ADDED WIDTH CALL-OUT LOC. A-B-E-F	HR BT KZ

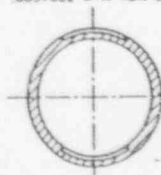
LOCATION	A	B	C	D	E	F	G	H	I	J	K
PHYSICALLY MEAS. DEPTH	.0200	.0210	—	—	.0210	THRU	THRU	.0300	.0100	.0250	.0145
DEPTH IN % OF WALL	39%	41%	—	—	41%	100%	100%	58%	19%	49%	28%

DIA OF DEFECT ±.003

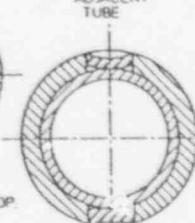


ALIGN ELECTRO-ETCH AND GROOVES

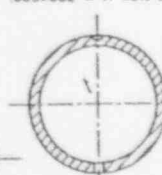
LOC A
ØØ CRC 375 LG X
ØØS+.002 W X 40% DP.



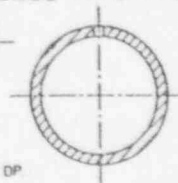
LOC C
ADJACENT
TUBE



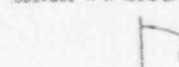
LOC E
ØØ AXIAL
ØØS+.002 W X 40% DP.



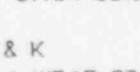
LOC G
Ø.052 THRU WALL



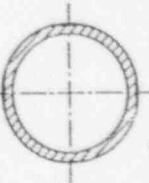
LOC F
AXIAL
ØØS+.002 W X 100% DP.



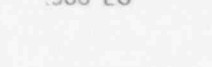
LOC H
Ø7/64 60%



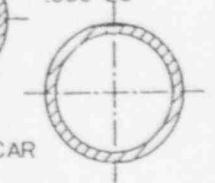
LOC I
4X Ø3/16 20%



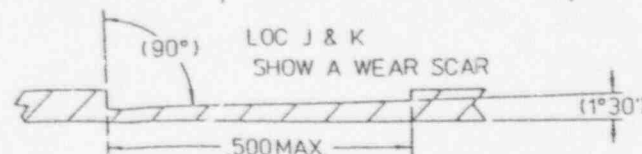
LOC J
50% WEAR SCAR
.500 LG



LOC K
30% WEAR SCAR
.500 LG



LOC D
BAT WING



MATERIAL INCONEL 600

AVERAGE MEAS. WALL THK. .0515

NOMINAL WALL THK. .049

HEAT LOT NO. 752493

TEST FREQ. USED NA

SERIAL NO. E-13328

P.O. NO. 679

REL. NO. MR5524

QUALITY REL. NO. NA

DATE MFG. 2-1-95

O.A. INSP. *Hung*

CUSTOMER CONRAD NUCLEAR

RECORDED NA

PROBE USED NA

REVIEWED BY *[Signature]*

NOTE

UNL. OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
XXXX ± .003
XXX ± .015
XX ± .050
X ± .003
ANGULAR ± 3°
FINISH

DRAWN
G. MATELICH
CHECK
B. JONES
DESIGN
APVD. OA
G. ATKINS

DATE
08/24/94
08/30/94
08/31/94

ZETEC INC.

POST OFFICE BOX 110 ISSAQUAH WASHINGTON
98027-0110 USA TELEPHONE (206) 792-5316

TITLE
DUAL GUIDE TUBE STD.
W/ MISC. DEFECTS

SIMILAR

OWG NO

2-415-1015

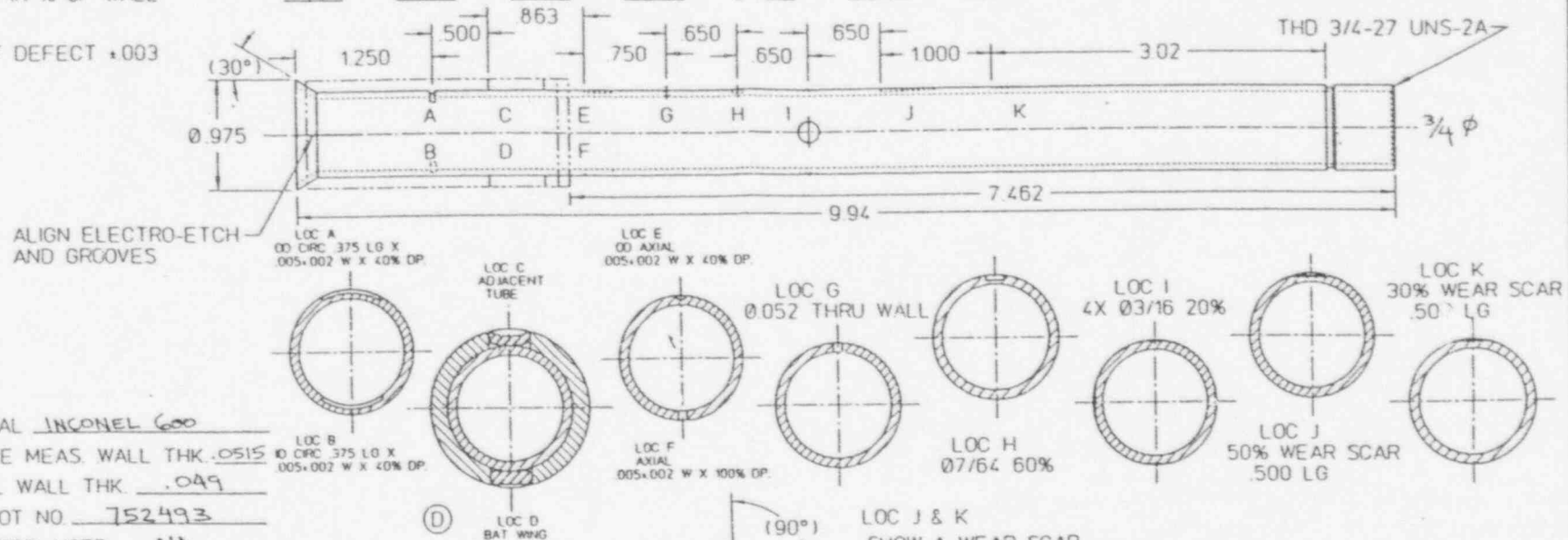
SCALE NTS

USED BY 2-415-0004

SHT 1 OF 2

REV. STATUS OF SHEETS				REVISIONS				APVD	CK	DR
LTR	DATE	DESCRIPTION								
E	11/29/94	ADDED WIDTH CALL-OUT LOC. A-B-E-F						HA	BJ	KZ

LOCATION	A	B	C	D	E	F	G	H	I	J	K
PHYSICALLY MEAS. DEPTH	.0205	.0210	—	—	.0210	THRU	THRU	.0300	.0105	.0240	.0150
DEPTH IN % OF WALL	40%	41%	—	—	41%	100%	100%	58%	20%	47%	29%
DIA OF DEFECT $\pm .003$											



MATERIAL INCONEL 600
 AVERAGE MEAS. WALL THK. .0515
 NOMINAL WALL THK. .049
 HEAT LOT NO. 752493
 TEST FREQ. USED NA
 SERIAL NO. Z-13329
 P.O. NO. 679
 REL. NO. MR5524
 QUALITY REL. NO. NA
 DATE MFG. 2-1-95
 O.A. INSP. HA
 CUSTOMER CONRAD NUCLEAR
 RECORDED NA
 PROBE USED NA
 REVIEWED BY HA

NOTE:

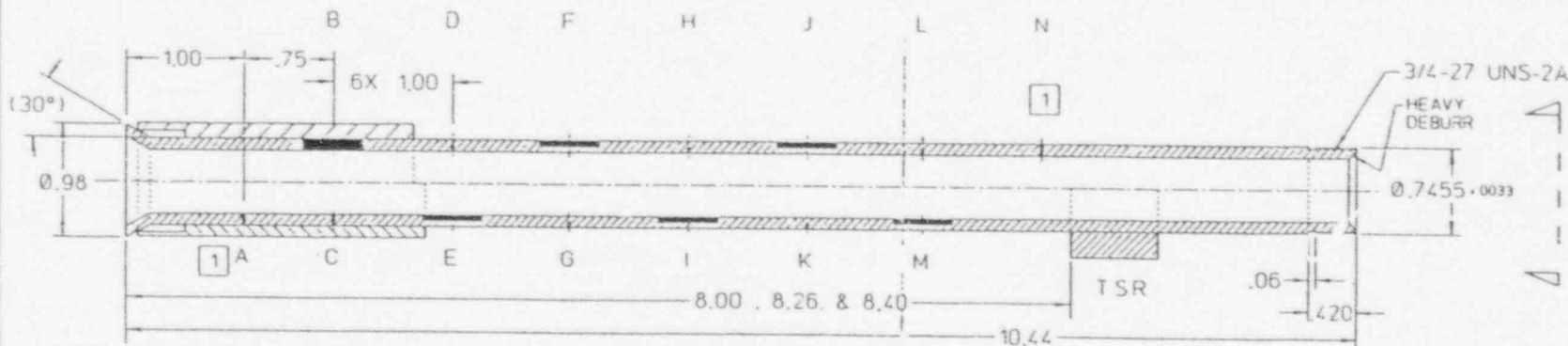
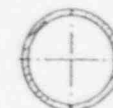
UNLESS OTHERWISE SPECIFIED		DRAWN	DATE	ZETEC INC. POST OFFICE BOX 110 MISSAQUAH WASH-STATE 99027-0110 U.S.A. TELEPHONE (208) 387-5316	
DIM ARE IN INCHES		G. MATELICH	08/24/94		
TOLERANCES		CHECK			
DECIMAL FRACT. $\pm 1/16$		B. JONES	08/30/94		
XXXX $\pm .003$		DESIGN		TITLE	
XXX $\pm .015$				DUAL GUIDE TUBE STD.	
XX $\pm .050$				W/ MISC. DEFECTS	
X $\pm .003$				SIMILAR	DWG NO.
ANGULAR $\pm 3^\circ$		APVD. OA			2-415-1015
FINISH		G. ATKINS	08/31/94	SCALE NTS	USED ON 2-415-0004 SHIT 1 OF 2

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

REVISIONS		REV STATUS OF SHEETS	LTR		DATE	DESCRIPTION	APVD	CK	DR
3	2								
		SHEET							

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS. DEPTH	THRU	THRU	THRU	.0295	.0305	.0315	.0310	.0200	.0205	.0210	.0220	.0095	.0100	THRU
DEPTH IN % OF WALL	100%	100%	100%	58%	60%	62%	61%	39%	40%	43%	43%	19%	20%	100%

SHOWS 100%
THRU HOLE
LOC N



ORIENTATION
OF ALL FLAWS

1 0.052 ±.003 IN STD. ≤ .75 DIA.
0.067 ±.003 IN STD. > .75 DIA.

MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .051
NOMINAL WALL THK .049
HEAT LOT NO 752493
TEST FREQ USED NA
SERIAL NO Z-15577
PO NO 51148
REL NO NA
QUALITY REL NO NA
DATE MFG 12-16-96
QA INSP [Signature]
CUSTOMER ROCKRIDGE TECHNOLOGIES
RECORDED NA
PROBE USED NA
REVIEWED BY Charlotte Butler

SHOWS 100%
AXIAL FLAW
LOC B



LOC A
SHOWS 100%
THRU HOLE

SHOWS 60% ID
CIRC FLAW
LOC D



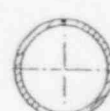
LOC C
SHOWS 100%
CIRC FLAW

SHOWS 60% ID
AXIAL FLAW
LOC E



LOC E
SHOWS 60% ID
AXIAL FLAW

SHOWS 60% OD
AXIAL FLAW
LOC F



LOC G
SHOWS 60% OD
CIRC FLAW

SHOWS 40% ID
CIRC FLAW
LOC H



LOC I
SHOWS 40% ID
AXIAL FLAW

SHOWS 40% OD
AXIAL FLAW
LOC J



LOC K
SHOWS 40% OD
CIRC FLAW

SHOWS 20% ID
CIRC FLAW
LOC L



LOC M
SHOWS 20% ID
AXIAL FLAW

NOTE

3/4" φ (STOCK) TUBING

UNLESS OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. 1/16
XXXX ± .003
XXX ± .015
XX ± .050
X ± .003
ANGULAR ± 3°
FINISH

DRAWN
K ZEGKE
CHECK
ZOR
DESIGN
APVD CA
B. Allen

DATE
12/03/96
12/16/96
12/16/96
12/10/96

ZETEC INC

POST OFFICE BOX 10550 WASHINGTON
98027-0550 USA TELEPHONE (206) 392-5210

TITLE

G.T. CALIBRATION STANDARD

D=4040-1-A P=3435

SIMILAR

DWG NO

2-415-1059

SCALE NTS

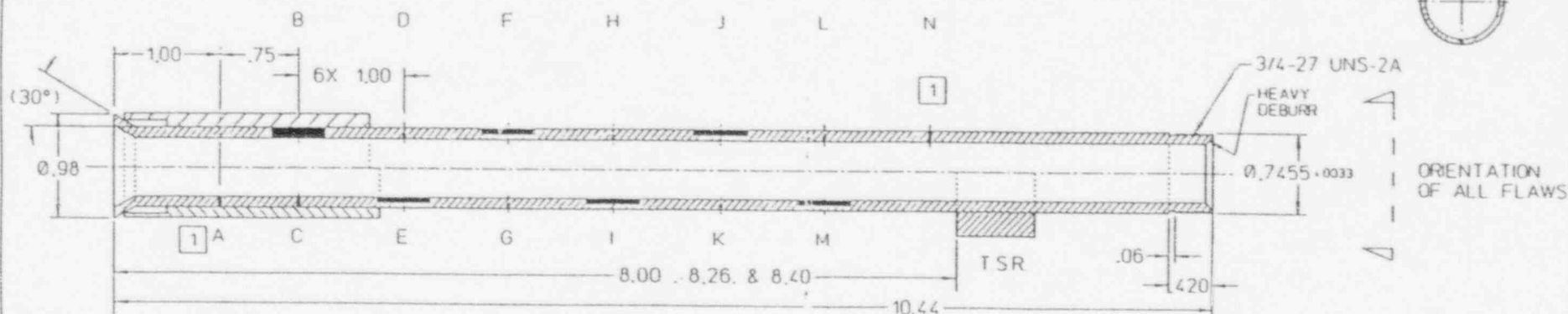
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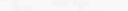
2-415-0015

SHT 1 OF 3

		REVISIONS	REV STATUS OF SHEETS	LTR	DATE	DESCRIPTION	APVD	CHK	DATE
3	2	SHEET							

SHOWS 100%
THRU HOLE
LOC N



SHOWS 100% AXIAL FLAW LOC B	SHOWS 60% ID CIRC. FLAW LOC D	SHOWS 60% OD AXIAL FLAW LOC F	SHOWS 40% ID CIRC FLAW LOC H	SHOWS 40% OD AXIAL FLAW LOC J	SHOWS 20% ID CIRC FLAW LOC L
					

LOC A
SHOWS 100%
THRU HOLE

LOC C
SHOWS 100%
CIRC FLAW

LOC E
SHOWS 60% ID
AXIAL FLAW

LOC G
SHOWS 60% OD
CIRC. FLAW

LOC I
SHOWS 40% ID
AXIAL FLAW

LOC K
SHOWS 40% OD
CIRC FLAW

LOC M
SHOWS 20% ID
AXIAL FLAW

REVIEWED BY Charlotte Better

$\frac{3}{4}$ " ϕ (stock) TUBING

FINISH	0.51 000
--------	----------

W. A. A. A.

2/10/90

SCALE IN

US	US
----	----

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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POST OFFICE BOX 140 ISSAQUAH WASHINGTON
98027-0140 U.S.A. TELEPHONE (206) 782-5326

D=4040-1-A P=3435

2-415-1059

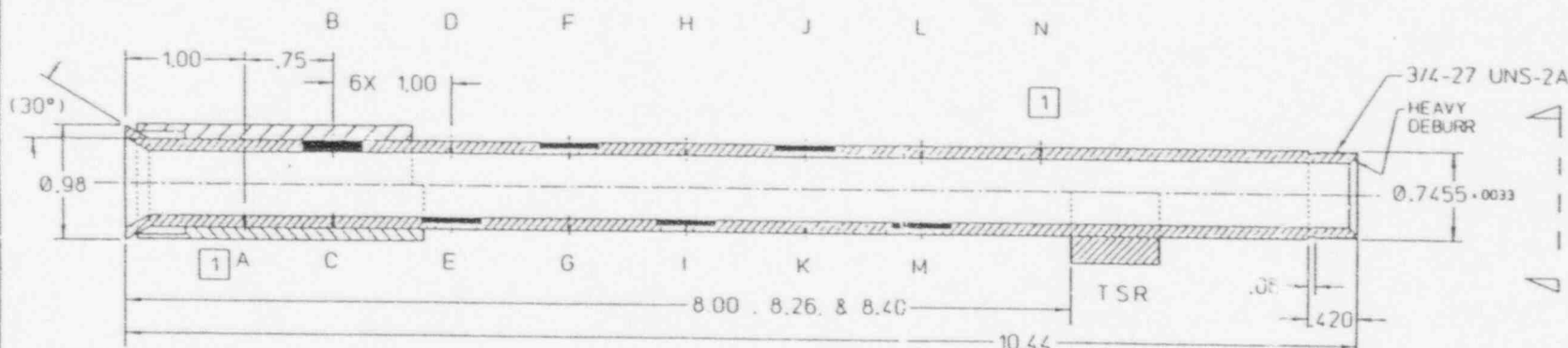
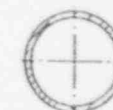
1955 1055

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

REV. NO.			REV. STATUS			REV. NO.			REV. STATUS			REV. NO.			REV. STATUS		
3	2	SHEET	REV	STATUS	OF SHEETS	LTR	DATE	DESCRIPTION	APVD	CK	DR						

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS DEPTH	THRU	THRU	THRU	.0290	.0280	.0315	.0315	.0190	.0195	.0205	.0205	.0100	.0095	THRU
DEPTH IN % OF WALL	100%	100%	100%	57%	55%	62%	62%	37%	38%	40%	40%	20%	19%	100%

SHOWS 100%
THRU HOLE
LOC N



1 0.052 ±.003 IN STD. ≤ .75 DIA.
0.067 ±.003 IN STD. > .75 DIA.

MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .051
NOMINAL WALL THK .049
HEAT LOT NO 752493
TEST FREQ USED NA
SERIAL NO Z-15579
PO NO 51148
REL NO NA
QUALITY REL NO NA
DATE MFG 12-16-96
O A INSP Harry B. Batten
CUSTOMER ROCKRIDGE TECHNOLOGIES
RECORDED NA
PROBE USED NA
REVIEWED BY Charlotte Batten

SHOWS 100%
AXIAL FLAW
LOC B

SHOWS 60% ID
CIRC FLAW
LOC C

SHOWS 60% OD
AXIAL FLAW
LOC F

SHOWS 40% ID
CIRC FLAW
LOC H

SHOWS 40% OD
AXIAL FLAW
LOC J

SHOWS 20% ID
CIRC FLAW
LOC L



LOC A
SHOWS 100%
THRU HOLE



LOC C
SHOWS 100%
CIRC FLAW



LOC E
SHOWS 60% ID
AXIAL FLAW



LOC G
SHOWS 60% OD
CIRC FLAW



LOC I
SHOWS 40% ID
AXIAL FLAW



LOC K
SHOWS 40% OD
CIRC FLAW



LOC M
SHOWS 20% ID
AXIAL FLAW

NOTE

3/4" (STOCK) TUBING

ONLY OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ±1/16
XXXX ±.003
XXX ±.015
XX ±.050
X ±.003
ANGULAR .3°
FINISH DIST 000

DRAWN

K ZEGKE

CHECK

2.0R

DESIGN

12/10/96

APVD CA

12/10/96

DATE

12/03/96

ZETEC
INC

POST OFFICE BOX 140 HADDON HARTFORD
06027-0140 USA TELEPHONE (203) 397-5346

TITLE

G.T. CALIBRATION STANDARD

D=4040-1-A P=3435

SIMILAR

DWG NO

2-415-1059

SCALE NTS

USED

2-415-0015

SHT

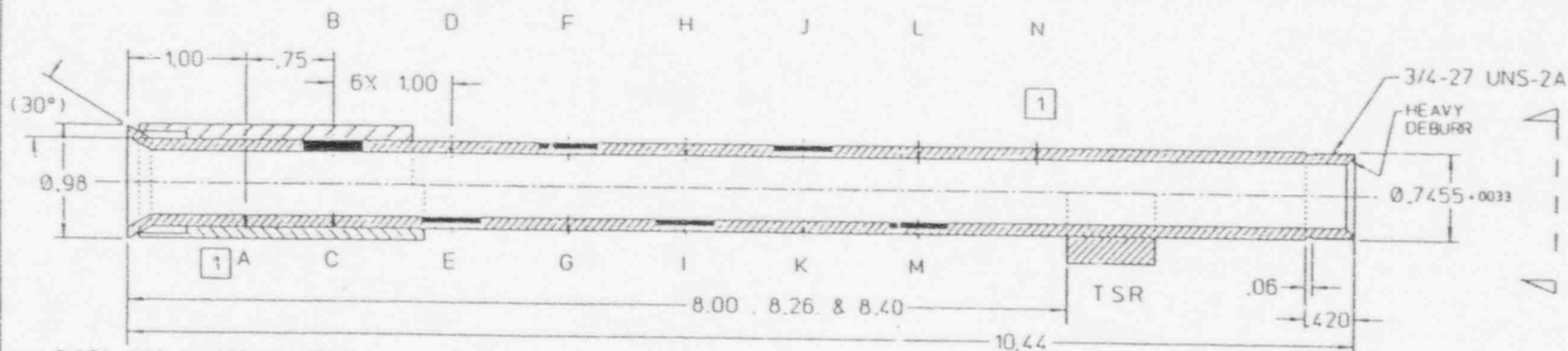
1 OF 3

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

REV. NO.		REV. STATUS		LTR		DATE		DESCRIPTION		APVD	CK	DR
3	2	SHEET										

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS DEPTH	THRU	THRU	THRU	.2295	.0295	.0305	.0310	.0190	.0200	.0210	.0210	.0095	.0100	THRU
DEPTH IN % OF WALL	100%	100%	100%	58%	58%	60%	61%	37%	39%	41%	41%	19%	20%	100%

SHOWS 100%
THRU HOLE
LOC N



1 0.052 ±.003 IN STD. ≤ .75 DIA
0.067 ±.003 IN STD. > .75 DIA

MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .051
NOMINAL WALL THK .049
HEAT LOT NO 752493
TEST FREQ. USED NA
SERIAL NO Z-15580
P.O. NO 51148
REL. NO NA
QUALITY REL NO NA
DATE MFG 12-16-96
QA INSP [Signature]
CUSTOMER ROCKRIDGE TECHNOLOGIES
RECORDED NA
PROBE USED NA
REVIEWED BY Charlotte Better

SHOWS 100%
AXIAL FLAW
LOC B

SHOWS 60% ID
CIRC. FLAW
LOC D

SHOWS 60% OD
AXIAL FLAW
LOC F

SHOWS 40% ID
CIRC. FLAW
LOC H

SHOWS 40% OD
AXIAL FLAW
LOC J

SHOWS 20% ID
CIRC. FLAW
LOC L



LOC A
SHOWS 100%
THRU HOLE



LOC C
SHOWS 100%
CIRC FLAW



LOC E
SHOWS 60% ID
CIRC FLAW



LOC G
SHOWS 60% OD
CIRC FLAW



LOC I
SHOWS 40% ID
AXIAL FLAW



LOC K
SHOWS 40% OD
CIRC FLAW



LOC M
SHOWS 20% ID
AXIAL FLAW

NOTE

3/4" (STOCK) TUBING

UNLESS OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ±.1/16
XXXX ±.003
XXX ±.015
XX ±.050
X ±.003
ANGULAR .3°
FINISH

DRAWN
K ZEGKE
CHECK
ZOR
DESIGN
P
APVD OA
12/10/96

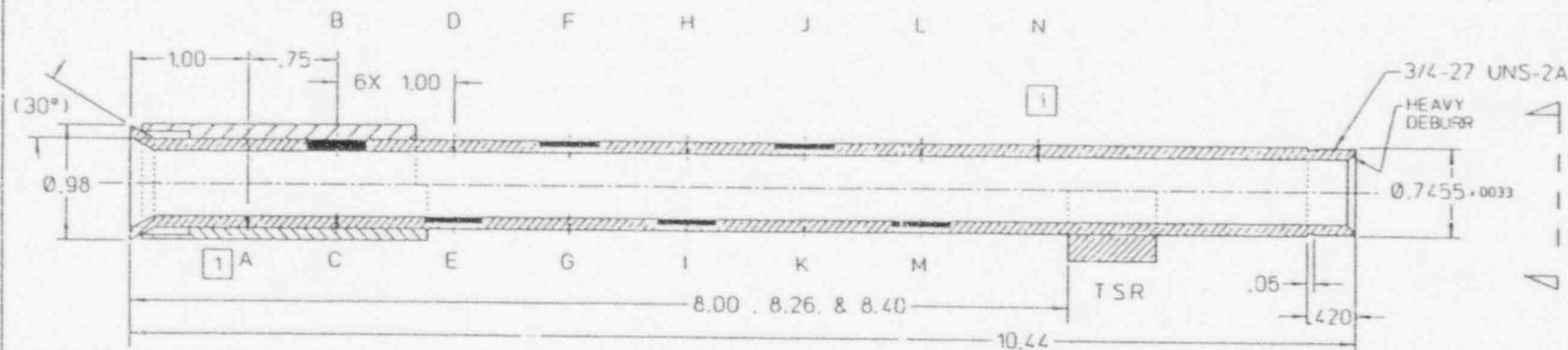
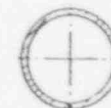
DATE
12/03/96
ZETEC INC
POST OFFICE BOX 110 ISSAQUAH WASHINGTON
98027-0110 USA TELEPHONE (206) 392-5316
TITLE
G.T. CALIBRATION STANDARD
D=4040-1-A P=3435
SCALE NTS
USED
2-415-0015 Sht 1 OF 3

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

REVISIONS		REV STATUS		LTR		DATE		DESCRIPTION		APVD	CK	DR
3	2	SHEET										

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS DEPTH	THRU	THRU	THRU	.0295	.0295	.0300	.0300	.0185	.0190	.0210	.0200	.0095	.0095	THRU
DEPTH IN % OF WALL	100%	100%	100%	53%	52%	59%	59%	36%	37%	41%	39%	19%	19%	100%

SHOWS 100%
THRU HOLE
LOC N



1 0.052 ±.003 IN STD. ≤ .75 DIA
0.067 ±.003 IN STD. > .75 DIA

MATERIAL INCONEL 600

AVERAGE MEAS WALL THK .051

NOMINAL WALL THK .049

HEAT LOT NO 752493

TEST FREQ USED NA

SERIAL NO Z-15581

P.O. NO 51145

REL NO NA

QUALITY REL NO NA

DATE MFG 12-16-96

O.A. INSP Jimmy Allen

CUSTOMER ROCKRIDGE TECHNOLOGIES

RECORDED NA

PROBE USED NA

REVIEWED BY Charlotte Butler

SHOWS 100%
AXIAL FLAW
LOC B

SHOWS 60% ID
CIRC FLAW
LOC D

SHOWS 60% OD
AXIAL FLAW
LOC F

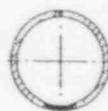
SHOWS 40% ID
CIRC FLAW
LOC H

SHOWS 40% OD
AXIAL FLAW
LOC J

SHOWS 20% ID
CIRC FLAW
LOC L



LOC A
SHOWS 100%
THRU HOLE



LOC C
SHOWS 100%
CIRC FLAW



LOC E
SHOWS 60% ID
AXIAL FLAW



LOC G
SHOWS 60% OD
CIRC FLAW



LOC I
SHOWS 40% ID
AXIAL FLAW



LOC K
SHOWS 40% OD
CIRC FLAW



LOC M
SHOWS 20% ID
AXIAL FLAW

NOTE:

3/4" φ (STOCK) TUBING

UNLESS OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT 1/16
XXXX ± .003
XXX ± .015
XX ± .050
X ± .003
ANGULAR .3°
FINISH DIST 000

DRAWN
K ZEGKE
CHECK
ZOR
DESIGN
APVD DA
B. Allen
DATE
12/03/96
12/11/96
12/10/96
12/10/96

ZETEC
INC

POST OFFICE BOX 10 ISSAQUAH WASHINGTON
98027-0100 USA TELEPHONE (206) 382-5316

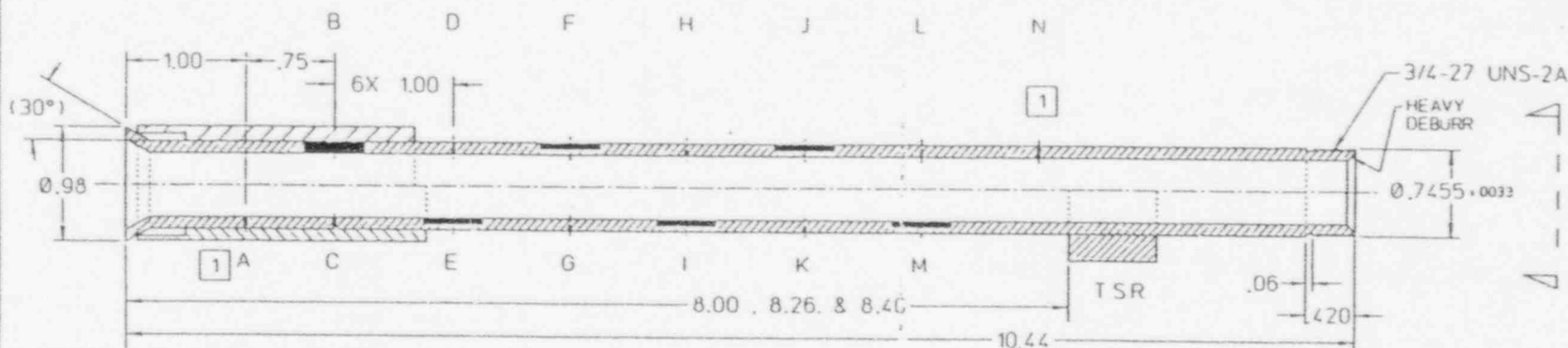
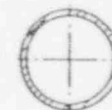
TITLE
G.T. CALIBRATION STANDARD
D4040-1-A P43435
SIMILAR DWG NO
2-415-1059
SCALE NTS USED
2-415-0016 SHIT 1 OF 3

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

		REVISIONS	REV STATUS	LTR	DATE	DESCRIPTION	APVD	CK	DR
3	2	SHEET	OF SHEETS						

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS DEPTH	THRU	THRU	THRU	.0305	.0305	.0305	.0300	.0200	.0215	.0205	.0200	.0100	.0115	THRU
DEPTH IN % OF WALL	100%	100%	100%	60%	60%	60%	59%	39%	42%	40%	39%	20%	23%	100%

SHOWS 100%
THRU HOLE
LOC N



1 0.052±.003 IN STD. ≤ .75 DIA
0.067±.003 IN STD. > .75 DIA

MATERIAL INCONEL 600

AVERAGE MEAS WALL THK .051

NOMINAL WALL THK .049

HEAT LOT NO 752493

TEST FREQ USED NA

SERIAL NO Z-15582

P.O. NO 51143

REL NO NA

QUALITY REL NO NA

DATE MFG 12-16-96

O.A. INSP Handwritten signature

CUSTOMER ROCKRIDGE TECHNOLOGIES

RECORDED NA

PROBE USED NA

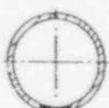
REVIEWED BY Charlotte Potter

SHOWS 100%
AXIAL FLAW
LOC B



LOC A
SHOWS 100%
THRU HOLE

SHOWS 60% ID
CIRC FLAW
LOC D



LOC C
SHOWS 100%
CIRC FLAW

SHOWS 60% OD
AXIAL FLAW
LOC F



LOC E
SHOWS 60% ID
AXIAL FLAW

SHOWS 40% ID
CIRC FLAW
LOC H



LOC G
SHOWS 60% OD
CIRC FLAW

SHOWS 40% OD
AXIAL FLAW
LOC J



LOC I
SHOWS 40% ID
AXIAL FLAW

SHOWS 20% ID
CIRC FLAW
LOC L



LOC K
SHOWS 40% OD
CIRC FLAW



LOC M
SHOWS 20% ID
AXIAL FLAW

NOTE

3/4" (stock) TUBING

UNLESS OTHERWISE SPECIFIED

DIM ARE IN INCHES

TOLERANCES

DECIMAL FRACT 1/16

XXXX ± .003

XXX ± .015

XX ± .050

X ± .003

ANGULAR .3°

FINISH

DIST 000

DRAWN

K ZEGKE

CHECK

ZOR

DESIGN

PD

APVD OA

B. Allen

DATE

12/03/96

12/16/96

12/16/96

12/10/96

12/10/96

12/10/96

ZETEC INC

POST OFFICE BOX 10 ISSAQUAH WASH-INGTON
98027-0140 U.S.A. TELEPHONE (206) 387-5318

TITLE

G.T. CALIBRATION STANDARD

D=4040-1-A P=3435

SIMILAR

DWG NO

2-415-1059

SCALE NTS

USED

2-415-0015

SHT

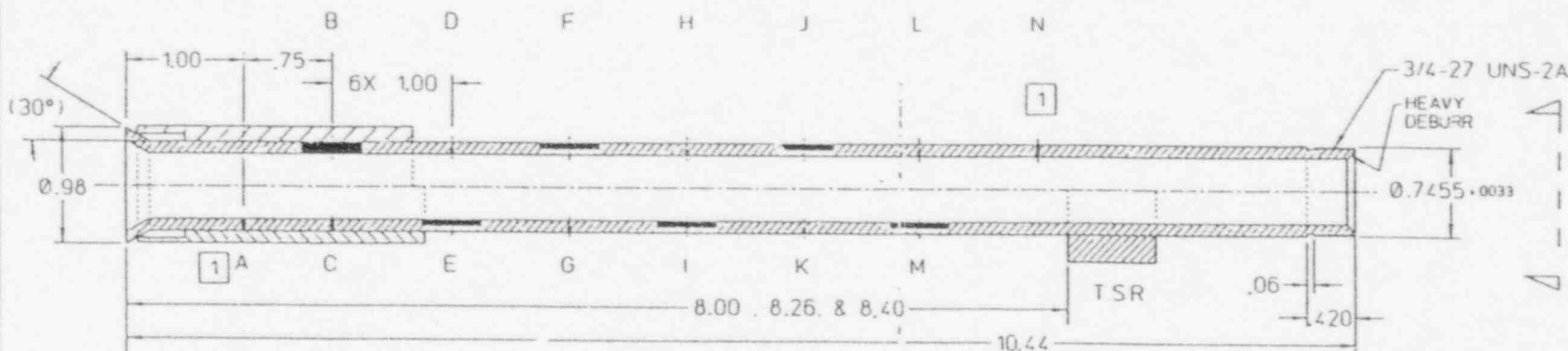
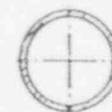
1 OF 3

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

REVISED		REV STATUS		LTR		DATE		REVISIONS		DESCRIPTION		APVD	CK	DR
3	2	SHEET	OF SHEETS											

LOCATION A B C D E F G H I J K L M N
PHYSICALLY MEAS DEPTH THRU THRU THRU .0290 .0295 .0320 .0305 .0200 .0190 .0220 .0205 .0095 .0100 THRU
DEPTH IN % OF WALL 100% 100% 100% 57% 58% 63% 60% 39% 37% 43% 40% 19% 20% 100%

SHOWS 100%
THRU HOLE
LOC N



ORIENTATION
OF ALL FLAWS

1 .0052 ±.003 IN STD. ≤ .75 DIA
.0067 ±.003 IN STD. > .75 DIA

MATERIAL INCONEL 600

AVERAGE MEAS WALL THK .051

NOMINAL WALL THK .049

HEAT LOT NO 752493

TEST FREQ USED NA

SERIAL NO Z-15583

PO NO 51148

REL NO NA

QUALITY REL NO NA

DATE MFG 12-16-96

O.A. INSP *[Signature]*

CUSTOMER ROCKRIDGE TECHNOLOGIES

RECORDED NA

PROBE USED NA

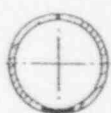
REVIEWED BY *Charlotte Potter*

SHOWS 100%
AXIAL FLAW
LOC B



LOC A
SHOWS 100%
THRU HOLE

SHOWS 60% ID
CIRC. FLAW
LOC D



LOC C
SHOWS 100%
CIRC FLAW

SHOWS 60% OD
AXIAL FLAW
LOC F



LOC E
SHOWS 60% ID
AXIAL FLAW

SHOWS 40% ID
CIRC FLAW
LOC H



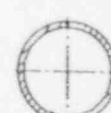
LOC G
SHOWS 60% OD
CIRC FLAW

SHOWS 40% OD
AXIAL FLAW
LOC J



LOC I
SHOWS 40% ID
AXIAL FLAW

SHOWS 20% ID
CIRC FLAW
LOC L



LOC K
SHOWS 40% OD
CIRC FLAW

SHOWS 20% ID
AXIAL FLAW
LOC M



LOC N
SHOWS 20% ID
AXIAL FLAW

NOTE:

3/4" φ (STOCK) TUBING

ORL OTHERWISE SPECIFIED

DIM ARE IN INCHES

TOLERANCES

DECIMAL FRACT 1/16

XXXX ± .003

XXX ± .015

XX ± .050

X ± .003

ANGULAR .3°

FINISH

DIST 000

DRAWN

K ZEGKE

CHECK

ZOR

DESIGN

APVD OA

B. Potter

DATE

12/03/96

12/16/96

12/10/96

12/10/96

ZETEC INC

POST OFFICE BOX 110 ISSAQUAH WASH-INGTON
98027-0110 U.S.A. TELEPHONE (206) 387-5116

TITLE

G.T. CALIBRATION STANDARD

D=4040-1-A P=3435

SIMILAR

DWG NO

2-415-1059

SCALE NTS

USED

2-415-0015

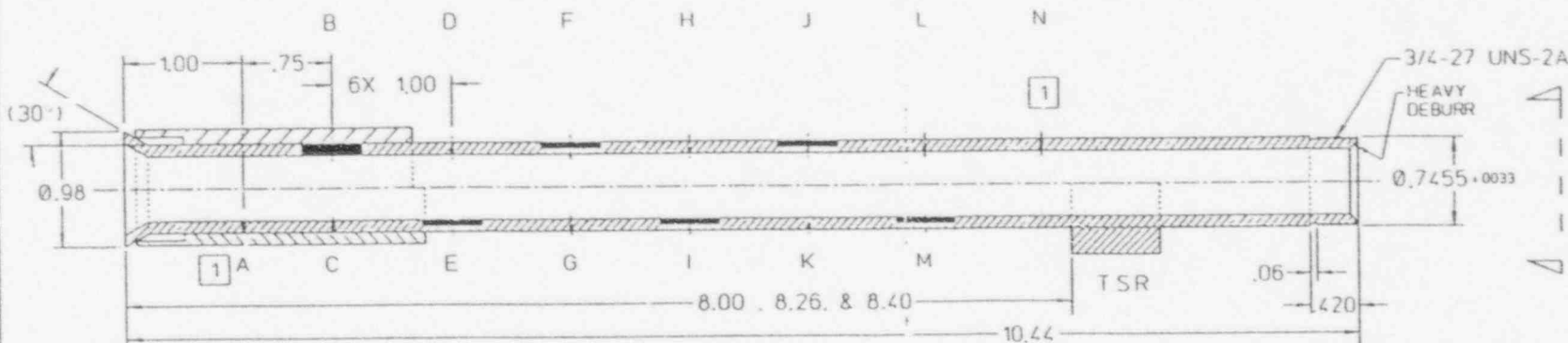
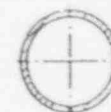
SHT 1 OF 3

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

		REVISIONS		REV STATUS OF SHEETS		LTR		DATE		REVISIONS		DESCRIPTION		APVD	CK	DR
3	2	SHEET														

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS DEPTH	THRU	THRU	THRU	.0300	.0290	.0315	.0300	.0195	.0190	.0210	.0210	.0100	.0095	THRU
DEPTH IN % OF WALL	100%	100%	100%	59%	57%	62%	59%	38%	37%	41%	41%	20%	19%	100%

SHOWS 100%
THRU HOLE
LOC N



ORIENTATION
OF ALL FLAWS

1 .0052±.003 IN STD. ≤ .75 DIA
.0067±.003 IN STD. > .75 DIA

MATERIAL INCONEL 600

AVERAGE MEAS WALL THK .051

NOMINAL WALL THK .049

HEAT LOT NO 752493

TEST FREQ USED NA

SERIAL NO Z-15584

P.O. NO 51148

REL NO NA

QUALITY REL NO NA

DATE MFG 12-16-96

O.A. INSP Henry Allen

CUSTOMER Rock Ridge Technologies

RECORDED NA

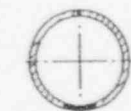
PROBE USED NA

REVIEWED BY Charlotte Potter

SHOWS 100%
AXIAL FLAW
LOC B



LOC A
SHOWS 100%
THRU HOLE



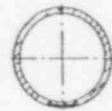
LOC C
SHOWS 100%
CIRC FLAW

SHOWS 60% ID
CIRC FLAW
LOC D



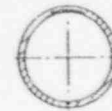
LOC E
SHOWS 60% ID
AXIAL FLAW

SHOWS 60% OD
AXIAL FLAW
LOC F



LOC G
SHOWS 60% OD
CIRC FLAW

SHOWS 40% ID
CIRC FLAW
LOC H



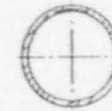
LOC I
SHOWS 40% ID
AXIAL FLAW

SHOWS 40% OD
AXIAL FLAW
LOC J



LOC K
SHOWS 40% OD
CIRC FLAW

SHOWS 20% ID
CIRC FLAW
LOC L



LOC M
SHOWS 20% ID
AXIAL FLAW

NOTE

3/4" φ (STOCK) TUBING

UNLESS OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT 1/16
XXXX ± .003
XXX ± .015
XX ± .050
X ± .003
ANGULAR .3°
FINISH DIST 000

DRAWN
K ZEGKE
CHECK
ZOR
DESIGN
APVD OA
12/10/96

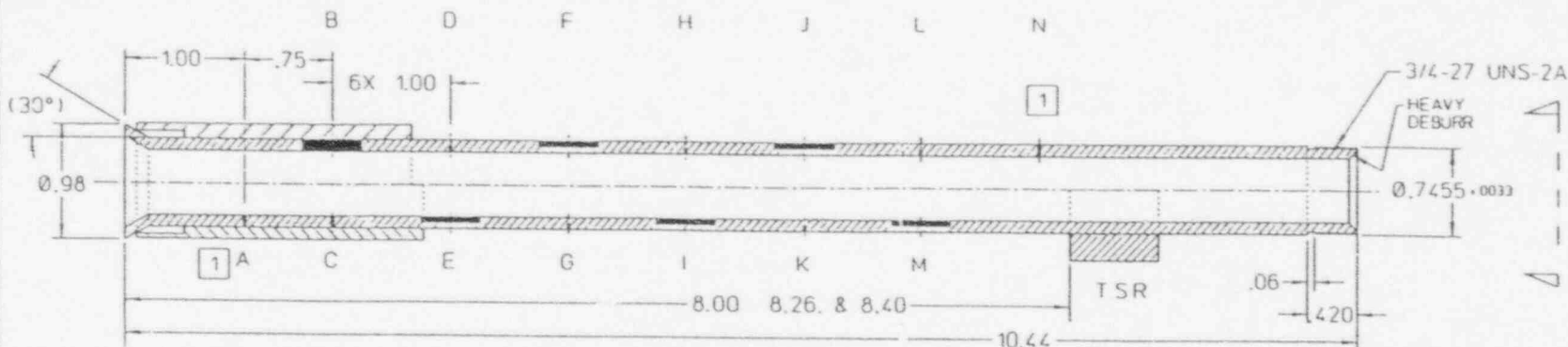
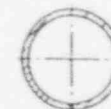
DATE
12/03/96
ZETEC INC
POST OFFICE BOX 400 ISSAQUAH WASHINGTON
98227-0400 USA TELEPHONE (206) 792-5330
TITLE
G.T. CALIBRATION STANDARD
D=4040-1-A P=3435
SIMILAR
DWG NO
2-415-1059
SCALE N.T.S.
USED IN 2-415-0016
SHT 1 OF 3

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

		REVISIONS		REV STATUS OF SHEETS		LTR		DATE		DESCRIPTION		APVD	CK	DR
3	2	SHEET												

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS DEPTH	THRU	THRU	THRU	.0295	.0290	.0295	.0300	.0190	.0195	.0205	.0200	.0100	.0110	THRU
DEPTH IN % OF WALL	100%	100%	100%	58%	57%	58%	59%	37%	38%	40%	39%	20%	22%	100%

SHOWS 100%
THRU HOLE
LOC N



1 0.052 ±.003 IN STD. ≤ .75 DIA
0.067 ±.003 IN STD. > .75 DIA

SHOWS 100%
AXIAL FLAW
LOC B

SHOWS 60% ID
CIRC FLAW
LOC D

SHOWS 60% OD
AXIAL FLAW
LOC F

SHOWS 40% ID
CIRC FLAW
LOC H

SHOWS 40% OD
AXIAL FLAW
LOC J

SHOWS 20% ID
CIRC FLAW
LOC L



LOC A
SHOWS 100%
THRU HOLE



LOC C
SHOWS 100%
CIRC FLAW



LOC E
SHOWS 60% ID
AXIAL FLAW



LOC G
SHOWS 60% OD
CIRC FLAW



LOC I
SHOWS 40% ID
AXIAL FLAW



LOC K
SHOWS 40% OD
CIRC FLAW



LOC M
SHOWS 20% ID
AXIAL FLAW

NOTE:
3/4" (stock) TUBING

UNLESS OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT 1/16
XXXX ± .003
XXX ± .015
XX ± .050
X ± .003
ANGULAR .3°
FINISH DIST 000

DRAWN
K ZEGKE
CHECK
2.0R
DESIGN
PD
APVD DA
B. Allen

DATE
12/03/96
12/11/96
12/10/96

ZETEC INC

POST OFFICE BOX 100 ISSAQUAH WASHINGTON
98027-0100 USA TELEPHONE (206) 382-5336

TITLE
G.T. CALIBRATION STANDARD
D=4040-1-A P=3435
SIMILAR DWG NO
2-415-1059
SCALE NTS USED
2-415-0016 SHT 1 OF 3

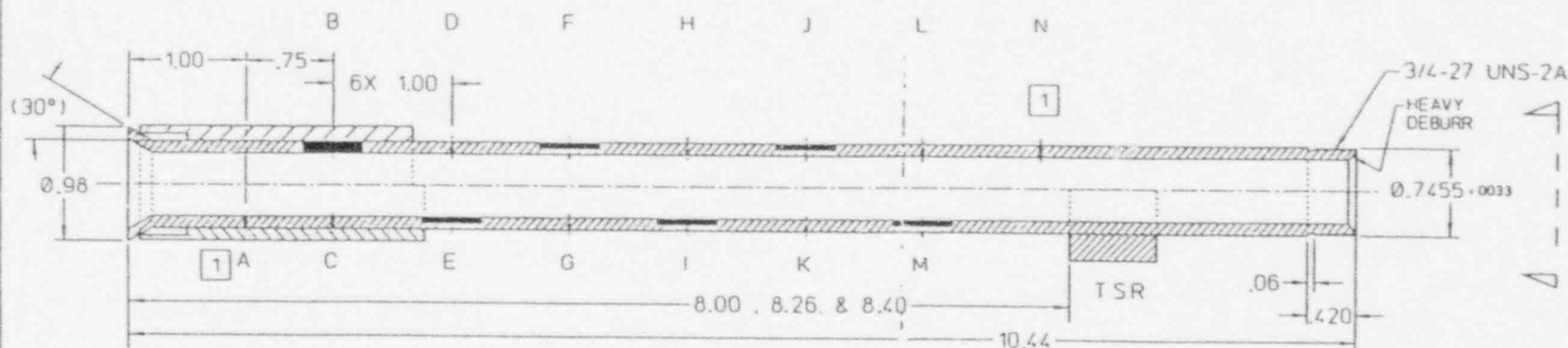
MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .051
NOMINAL WALL THK .049
HEAT LOT NO 752493
TEST FREQ USED NA
SERIAL NO Z-15585
PO NO S1148
REL NO NA
QUALITY REL NO NA
DATE MFG 12-16-96
QA INSP Shirley Allen
CUSTOMER Rock Ridge Technologies
RECORDED NA
PROBE USED NA
REVIEWED BY Charlotte Better

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

REVISEMENTS		REV STATUS		LTR		DATE		REVISIONS		DESCRIPTION		APVD	CK	DR
3	2	SHEET	OF SHEETS											

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS DEPTH	THRU	THRU	THRU	.0295	.0305	.0315	.0305	.0205	.0215	.0210	.0200	.0085	.0100	THRU
DEPTH IN % OF WALL	100%	100%	100%	58%	60%	62%	60%	40%	42%	41%	39%	17%	20%	100%

SHOWS 100%
THRU HOLE
LOC N



ORIENTATION
OF ALL FLAWS

1 0.052 ±.003 IN STD. ≤ .75 DIA.
0.067 ±.003 IN STD. > .75 DIA.

MATERIAL INCONEL 600

AVERAGE MEAS WALL THK. .051

NOMINAL WALL THK. .049

HEAT LOT NO 752493

TEST FREQ USED NA

SERIAL NO Z-15586

P.O. NO 51148

REL. NO NA

QUALITY REL NO NA

DATE MFG 12-16-96

O.A. INSP Mike Allen

CUSTOMER ROCK RIDGE TECHNOLOGIES

RECORDED NA

PROBE USED NA

REVIEWED BY Charlotte Bitter

SHOWS 100%
AXIAL FLAW
LOC B

SHOWS 60% ID
CIRC. FLAW
LOC D

SHOWS 60% OD
AXIAL FLAW
LOC F

SHOWS 40% ID
CIRC. FLAW
LOC H

SHOWS 40% OD
AXIAL FLAW
LOC J

SHOWS 20% ID
CIRC. FLAW
LOC L



LOC A
SHOWS 100%
THRU HOLE



LOC C
SHOWS 100%
CIRC FLAW



LOC E
SHOWS 60% ID
AXIAL FLAW



LOC G
SHOWS 60% OD
CIRC FLAW



LOC I
SHOWS 40% ID
AXIAL FLAW



LOC K
SHOWS 40% OD
CIRC FLAW



LOC M
SHOWS 20% ID
AXIAL FLAW

NOTE

3/4" (STOCK) TUBING

UNL OTHERWISE SPECIFIED

DIM ARE IN INCHES

TOLERANCES

DECIMAL FRACT ±1/16

XXXX ±.003

XXX ±.015

XX ±.050

X ±.003

ANGULAR .3°

FINISH

DIST 000

DRAWN

K ZEGKE

CHECK

ZOR

DESIGN

PD

APVD OA

12/10/96

DATE

12/03/96

ZETEC
INC

POST OFFICE BOX 110 ISSAQUAH WASHINGTON
98027-0110 U.S. TELEPHONE (206) 382-5316

TITLE

G.T. CALIBRATION STANDARD

D=4040-1-A P=3435

SIMILAR

DWG NO

2-415-1059

SCALE NTS

USED

2-415-0016

SHT

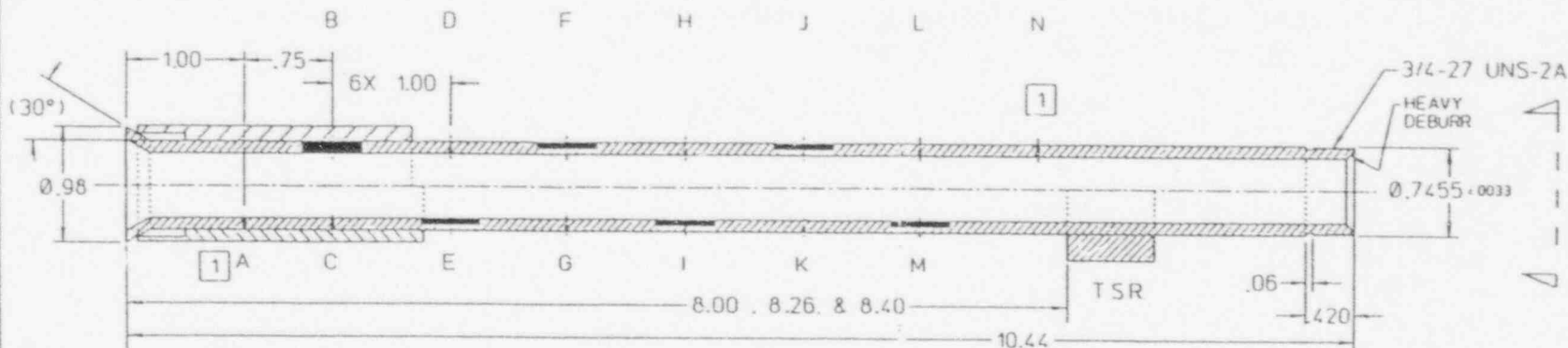
1 OF 3

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

REVISED		REV STATUS		REVISIONS		DESCRIPTION		APVD	CK	DR
3	2	SHEET	OF SHEETS	LTR	DATE					

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS DEPTH	THRU	THRU	THRU	.0295	.0305	.0315	.0295	.0190	.0190	.0210	.0205	.0090	.0105	THRU
DEPTH IN % OF WALL	100%	100%	100%	58%	60%	62%	58%	37%	37%	41%	40%	18%	21%	100%

SHOWS 100%
THRU HOLE
LOC N



ORIENTATION
OF ALL FLAWS

1 0.052 ±.003 IN STD. ≤ .75 DIA
0.067 ±.003 IN STD. > .75 DIA

MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .051
NOMINAL WALL THK .049
HEAT LOT NO 752493
TEST FREQ USED NA
SERIAL NO Z-15587
PO NO 51148
REL NO NA
QUALITY REL NO NA
DATE MFG 12-16-96
O.A INSP [Signature]
CUSTOMER ROCKRIDGE TECHNOLOGIES
RECORDED NA
PROBE USED NA
REVIEWED BY Charlotte Batten

SHOWS 100%
AXIAL FLAW
LOC B



LOC A
SHOWS 100%
THRU HOLE

SHOWS 100% ID
CIRC FLAW
LOC C



LOC C
SHOWS 100%
CIRC FLAW

SHOWS 60% ID
CIRC FLAW
LOC D



LOC D
SHOWS 60% ID
AXIAL FLAW

SHOWS 60% OD
AXIAL FLAW
LOC F



LOC F
SHOWS 60% OD
CIRC FLAW

SHOWS 40% ID
CIRC FLAW
LOC H



LOC H
SHOWS 40% ID
AXIAL FLAW

SHOWS 40% OD
AXIAL FLAW
LOC J



LOC J
SHOWS 40% OD
CIRC FLAW

SHOWS 20% ID
CIRC FLAW
LOC L



LOC L
SHOWS 20% ID
AXIAL FLAW

NOTE
3/4" (STOCK) TUBING

UNLESS OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL : FRACT : 1/16
XXXX : .003
XXX : .015
XX : .050
X : .003
ANGULAR : .3°
FINISH : DIST 000

DRAWN
K ZEGKE
CHECK
ZOR
DESIGN
APVD DA
B. Altun
DATE
12/03/96
12/16/96
12/10/96

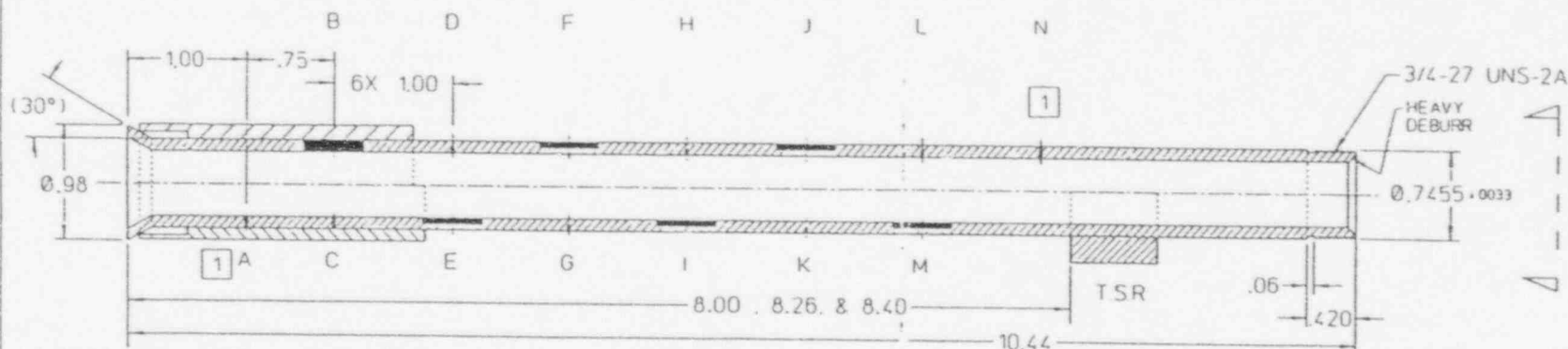
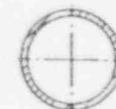
ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASH-WA 98277 DND USA TELEPHONE (206) 382-5336
TITLE
G.T. CALIBRATION STANDARD
D=4040-1-A P=3435
SIMILAR
DWG NO
2-415-1059
SCALE NTS
USED
2-415-0016
SHT 1 OF 3

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG.

REVISES		REV STATUS OF SHEETS		REVISES		DESCRIPTION		APVD	CK	DR
3	2	SHEET		LTR	DATE					

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS DEPTH	THRU	THRU	THRU	.0290	.0300	.0295	.0305	.0190	.0200	.0200	.0205	.0100	.0105	THRU
DEPTH IN % OF WALL	100%	100%	100%	57%	59%	58%	60%	37%	39%	39%	40%	20%	21%	100%

SHOWS 100%
THRU HOLE
LOC N



ORIENTATION
OF ALL FLAWS

1 0.052 ±.003 IN STD. ≤ .75 DIA
0.067 ±.003 IN STD. > .75 DIA

MATERIAL INCONEL 600

AVERAGE MEAS WALL THK .051

NOMINAL WALL THK .049

HEAT LOT NO 752493

TEST FREQ USED NA

SERIAL NO Z-15588

P.O. NO 51148

REL NO NA

QUALITY REL NO NA

DATE MFG 12-16-96

O.A. INSP Jimmy Allen

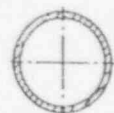
CUSTOMER ROCKRIDGE TECHNOLOGIES

RECORDED NA

PROBE USED NA

REVIEWED BY Charlotta Better

SHOWS 100%
AXIAL FLAW
LOC B



LOC A
SHOWS 100%
THRU HOLE

SHOWS 60% ID
CIRC FLAW
LOC D



LOC C
SHOWS 100%
CIRC FLAW

SHOWS 60% ID
CIRC FLAW
LOC E



LOC E
SHOWS 60% ID
CIRC FLAW

SHOWS 60% OD
AXIAL FLAW
LOC F



LOC G
SHOWS 60% OD
CIRC FLAW

SHOWS 40% ID
CIRC FLAW
LOC H



LOC I
SHOWS 40% ID
CIRC FLAW

SHOWS 40% OD
AXIAL FLAW
LOC J



LOC K
SHOWS 40% OD
CIRC FLAW

SHOWS 20% ID
CIRC FLAW
LOC L



LOC M
SHOWS 20% ID
CIRC FLAW

NOTE:

3/4" φ (STOCK) TUBING

UNLESS OTHERWISE SPECIFIED

DIM ARE IN INCHES

TOLERANCES

DECIMAL FRACT 1/16

XXXX ± .003

XXX ± .015

XX ± .050

X ± .003

ANGULAR 3°

FINISH

DIST 000

DRAWN
K ZEGKE

CHECK
ZOR

DESIGN
PJD

APVD OA
B. Allen

DATE
12/03/96

12/11/96

12/10/96

12/10/96

ZETEC
INC

POST OFFICE BOX 100 ISSAQUAH WASHINGTON
98227-0100 USA TELEPHONE (206) 362-5330

TITLE

G.T. CALIBRATION STANDARD

D#4040-1 A P#3435

SIMILAR

DWG NO

2-415-1059

SCALE NTS

USED

2-415-0016

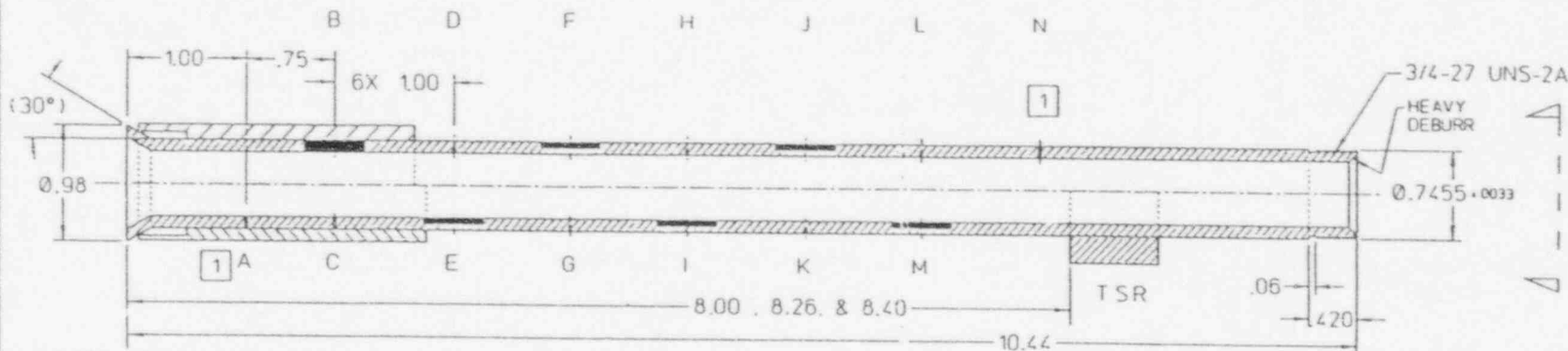
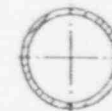
SHT 1 OF 3

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

REVISIONS			REV STATUS OF SHEETS	REVISIONS			APVD	CK	DR
LTR	DATE	DESCRIPTION							
3	2	SHEET							

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS DEPTH	THRU	THRU	THRU	.0290	.0295	.0305	.0310	.0195	.0195	.0205	.0205	.0100	.0105	THRU
DEPTH IN % OF WALL	100%	100%	100%	57%	58%	60%	61%	38%	38%	40%	40%	20%	21%	100%

SHOWS 100%
THRU HOLE
LOC N



ORIENTATION
OF ALL FLAWS

[1] 0.052 ±.003 IN STD. ≤ .75 DIA
0.067 ±.003 IN STD. > .75 DIA

MATERIAL INCONEL 600

AVERAGE MEAS WALL THK .051

NOMINAL WALL THK .049

HEAT LOT NO 752493

TEST FREQ USED NA

SERIAL NO Z-15589

P.O. NO 51145

REL. NO NA

QUALITY REL NO NA

DATE MFG 12-16-96

O.A. INSP Harry C. Allen

CUSTOMER ROCK RIVER TECHNOLOGIES

RECORDED NA

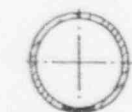
PROBE USED NA

REVIEWED BY Charlotte Butler

SHOWS 100%
AXIAL FLAW
LOC B



LOC A
SHOWS 100%
THRU HOLE



LOC C
SHOWS 100%
CIRC FLAW

SHOWS 60% ID
CIRC FLAW
LOC D



LOC E
SHOWS 60% ID
AXIAL FLAW

SHOWS 60% OD
AXIAL FLAW
LOC F



LOC G
SHOWS 60% OD
CIRC FLAW

SHOWS 40% ID
CIRC FLAW
LOC H



LOC I
SHOWS 40% ID
AXIAL FLAW

SHOWS 40% OD
AXIAL FLAW
LOC J



LOC K
SHOWS 40% OD
CIRC FLAW

SHOWS 20% ID
CIRC FLAW
LOC L



LOC M
SHOWS 20% ID
AXIAL FLAW

NOTE:

3/4" φ (STOCK) TUBING

UNLESS OTHERWISE SPECIFIED

DIM ARE IN INCHES

TOLERANCES

DECIMAL FRACT 1/16

XXXX ± .003

XXX ± .015

XX ± .050

X ± .003

ANGULAR .3°

FINISH

DIST 000

DRAWN

K ZEGKE

CHECK

ZOR

DESIGN

APVD OA

B. Allen

12/10/96

DATE

12/03/96

ZETEC INC.

POST OFFICE BOX 140 ISSAQUAH WASHINGTON
9827-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE

G.T. CALIBRATION STANDARD

D4040-1-A P4335

SIMILAR

DWG NO

2-415-1059

SCALE NTS

USED

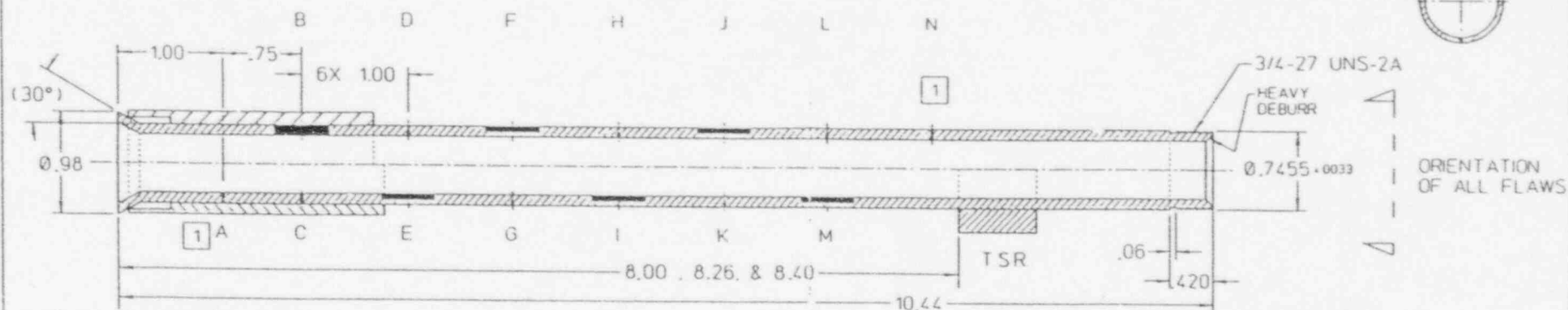
2-415-0016

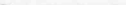

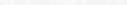
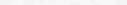
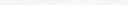
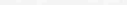
SHT

1 OF 3

		REVISIONS	REV STATUS OF SHEETS	LTR	DATE	DESCRIPTION	APVD	CK	OR
3	2	SHEET							

SHOWS 100%
THRU HOLE
LOC N



SHOWS 100% AXIAL FLAW LOC B	SHOWS 60% ID CIRC. FLAW LOC D	SHOWS 60% OD. AXIAL FLAW LOC F	SHOWS 40% ID CIRC FLAW LOC H	SHOWS 40% OD. AXIAL FLAW LOC J	SHOWS 20% ID CIRC FLAW LOC L
					

LOC A
SHOWS 100% THRU HOLE

LOC C
SHOWS 100% CIRC FLAW

LOC E
SHOWS 60% ID AXIAL FLAW

LOC G
SHOWS 60% OD CIRC FLAW

LOC I
SHOWS 40% ID AXIAL FLAW

LOC K
SHOWS 40% OD CIRC FLAW

LOC M
SHOWS 20% ID AXIAL FLAW

REVIEWED BY Charlotte R.

3/4" ϕ (STOCK) TUBING

FINISH

APV 00 0A

710/96

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100	100

112/10/90

POST OFFICE BOX 140 ISSAQUAH WASHINGTON
98027-0140 U.S.A. TELEPHONE (206) 382-5316

0440-1-A P#3435

DWG NO

1

SCALE NTS

1

$$U \geq 0$$

2-415-1059

2015 RELEASE UNDER E.O. 14176

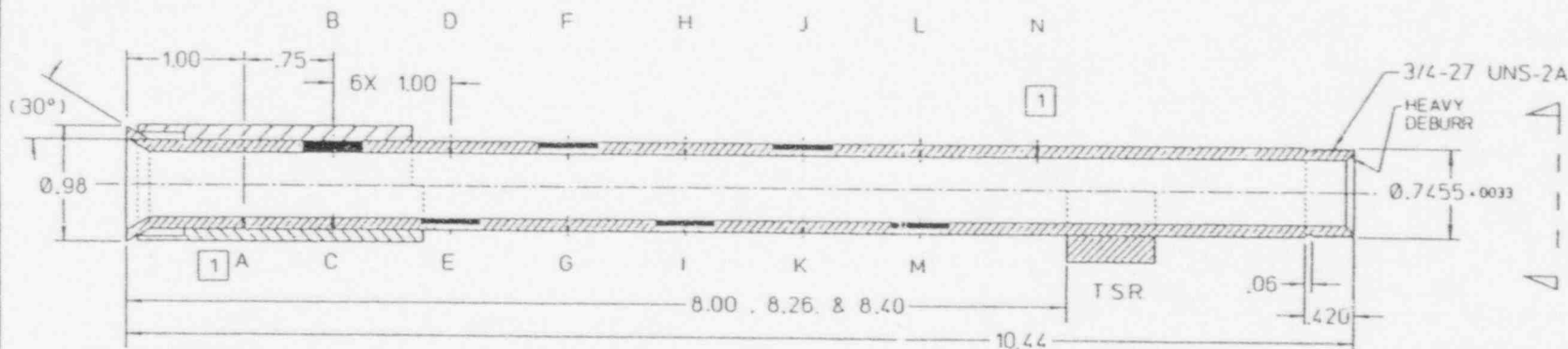
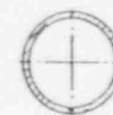
15-00162-105

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

REV. NO.		REV. STATUS		LTR		DATE		REVISIONS		DESCRIPTION		APVD	CK	DR
3	2	SHEET	OF SHEETS											

LOCATION A B C D E F G H I J K L M N
PHYSICALLY MEAS DEPTH THRU THRU THRU .0300 .0295 .0320 .0300 .0190 .0200 .0200 .0205 .0095 .0100 THRU
DEPTH IN % OF WALL 100% 100% 100% 59% 58% 63% 59% 37% 39% 39% 40% 19% 20% 100%

SHOWS 100%
THRU HOLE
LOC N



1 0.052 ±.003 IN STD. ≤ .75 DIA
0.067 ±.003 IN STD. > .75 DIA

MATERIAL INCONEL 600

AVERAGE MEAS WALL THK .051

NOMINAL WALL THK .049

HEAT LOT NO 752493

TEST FREQ USED NA

SERIAL NO Z-15591

P.O. NO 51148

REL NO NA

QUALITY REL NO NA

DATE MFG 12-16-96

O.A. INSP *Myer Allen*

CUSTOMER ROCKRIDGE TECHNOLOGIES

RECORDED NA

PROBE USED NA

REVIEWED BY *Charlotte Butler*

SHOWS 100%
AXIAL FLAW
LOC B



LOC A
SHOWS 100%
THRU HOLE

SHOWS 60% ID
CIRC FLAW
LOC D



LOC C
SHOWS 100%
CIRC FLAW

SHOWS 60% OD
AXIAL FLAW
LOC F



LOC E
SHOWS 60% ID
AXIAL FLAW

SHOWS 60% OD
CIRC FLAW
LOC G



LOC F
SHOWS 60% OD
CIRC FLAW

SHOWS 40% ID
CIRC FLAW
LOC H



LOC I
SHOWS 40% ID
AXIAL FLAW

SHOWS 40% OD
AXIAL FLAW
LOC J



LOC K
SHOWS 40% OD
CIRC FLAW

SHOWS 20% ID
CIRC FLAW
LOC L



LOC M
SHOWS 20% ID
AXIAL FLAW

NOTE

3/4" (STOCK) TUBING

SMALL DENT LOCATED BETWEEN F-G
AND H-I. PROPER FUNCTION OF
STANDARD AND RESPONSE FROM
ADJACENT EDM NOTCHES NOT AFFECTED

UNLESS OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES

DECIMAL FRACT 1/16
XXXX ± .003
XXX ± .015
XX ± .050
X ± .003
ANGULAR .5°
FINISH DIST 000

DRAWN

K ZEGKE

CHECK

ZOR

DESIGN

AD

APVD OA

B. Allen

DATE

12/03/96

CHECK

12/16/96

DESIGN

12/16/96

APVD OA

12/10/96

ZETEC INC

POST OFFICE BOX 110 ISSAQUAH WASHINGTON
98027-0110 U.S. TELEPHONE (206) 382-5300

TITLE

G.T. CALIBRATION STANDARD

D=4040-1-A P=3435

SIMILAR

DWG NO

2-415-1059

SCALE NTS

USED

2-415-0016

SHT

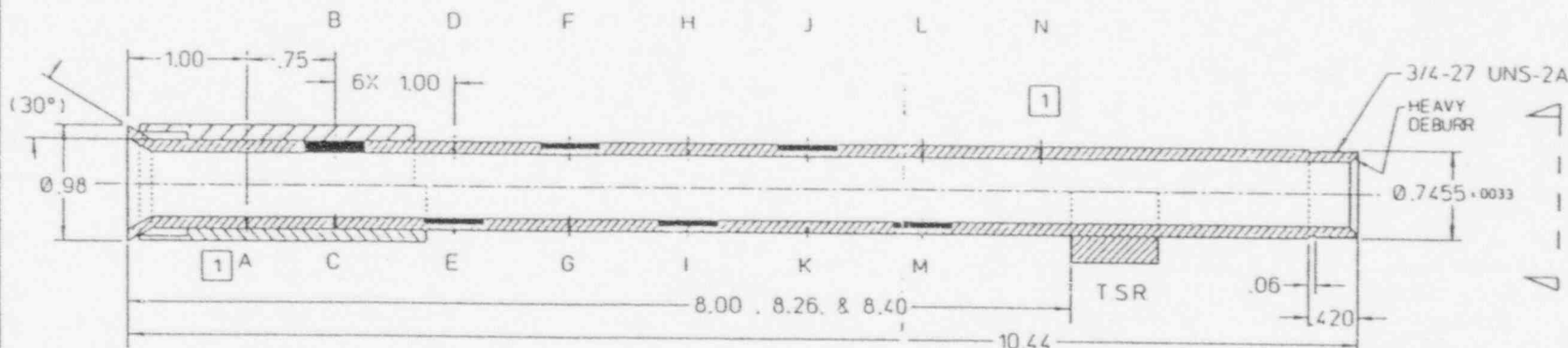
OF 3

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

		REVISIONS	REV STATUS OF SHEETS	REVISIONS									
3	2	SHEET		LTR	DATE	DESCRIPTION				APVD	CK	DR	

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS DEPTH	THRU	THRU	THRU	.0305	.0295	.0300	.0296	.0205	.0195	.0200	.0200	.0085	.0100	THRU
DEPTH IN % OF WALL	100%	100%	100%	60%	58%	59%	58%	40%	38%	39%	39%	17%	20%	100%

SHOWS 100%
THRU HOLE
LOC N



1 0.052 ±.003 IN STD. ≤ .75 DIA
0.067 ±.003 IN STD. > .75 DIA

MATERIAL INCONEL 600

AVERAGE MEAS WALL THK .051

NOMINAL WALL THK .049

HEAT LOT NO 752493

TEST FREQ USED NA

SERIAL NO Z-15592

P.O NO 51148

REL NO NA

QUALITY REL NO NA

DATE MFG 12-16-96

O.A INSP Handwritten signature

CUSTOMER ROCKRIDGE TECHNOLOGIES

RECORDED NA

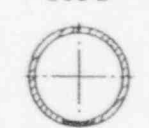
PROBE USED NA

REVIEWED BY Charlotte Better

SHOWS 100%
AXIAL FLAW
LOC B



LOC A
SHOWS 100%
THRU HOLE



LOC C
SHOWS 100%
CIRC FLAW

SHOWS 60% ID
CIRC FLAW
LOC D



LOC E
SHOWS 60% ID
AXIAL FLAW

SHOWS 60% OD
AXIAL FLAW
LOC F



LOC G
SHOWS 60% OD
CIRC FLAW

SHOWS 40% ID
CIRC FLAW
LOC H



LOC I
SHOWS 40% ID
AXIAL FLAW

SHOWS 40% OD
AXIAL FLAW
LOC J



LOC K
SHOWS 40% OD
CIRC FLAW

SHOWS 20% ID
CIRC FLAW
LOC L



LOC M
SHOWS 20% ID
AXIAL FLAW

NOTE:

3/4" (STOCK) TUBING

ONE OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL : FRACT : 1/16
XXXX ± .003
XXX ± .015
XX ± .050
X ± .003
ANGULAR : 3°
FINISH : DIST 000

DRAWN
K ZEGKE
DATE
12/03/96
CHECK
ZOR
DESIGN
PJD
APVD OA
B. Altman
12/10/96

ZETEC
INC

POST OFFICE BOX 140 ISSAQUAH WASHINGTON
98227-0140 U.S. TELEPHONE (206) 392-5316

TITLE
G.T. CALIBRATION STANDARD
D=4040-1-A P=3435
SIMILAR
DWG NO
2-415-1059
SCALE NTS
USED
2-415-0016 SHT 1 OF 3

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ± .002 WIDE X .500 LONG

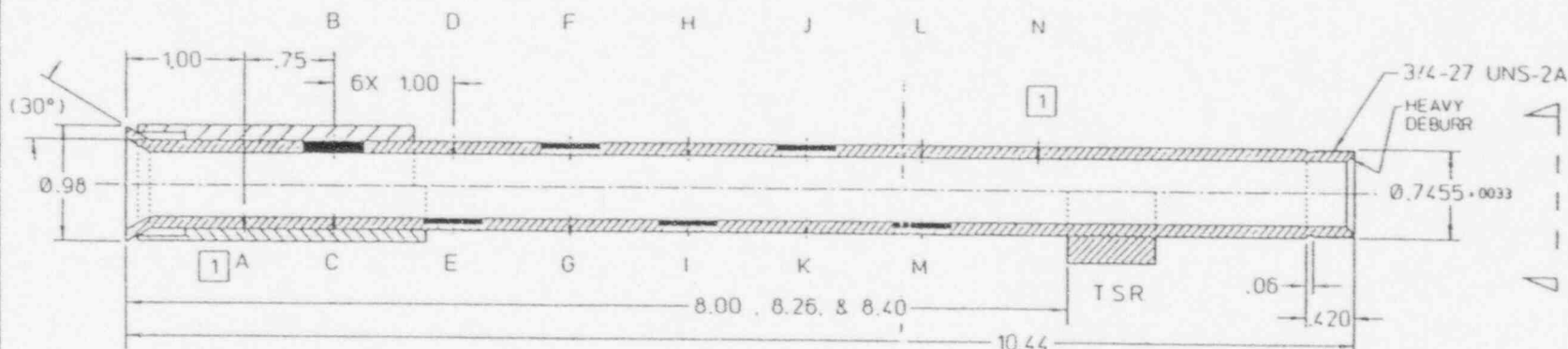
REV. NO.		REV. STATUS		LTR		DATE		DESCRIPTION		APVD	CK	DR
3	2	SHEET										

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS DEPTH	THRU	THRU	THRU	.0305	.0310	.0310	.0305	.0200	.0200	.0210	.0200	.0075	.0100	THRU
DEPTH IN % OF WALL	100%	100%	100%	60%	61%	61%	60%	39%	39%	41%	39%	19%	20%	100%

SHOWS 100%
THRU HOLE
LOC N



ORIENTATION
OF ALL FLAWS



1 0.052 ± .003 IN STD. ≤ .75 DIA
0.067 ± .003 IN STD. > .75 DIA

MATERIAL INCONEL 600

AVERAGE MEAS WALL THK .05

NOMINAL WALL THK .049

HEAT LOT NO 752493

TEST FREQ USED NA

SERIAL NO Z-15593

P.O. NO 51148

REL. NO NA

QUALITY REL. NO NA

DATE MFG 12-16-96

O.A. INSP Billy Allen

CUSTOMER ROCKRIDGE TECHNOLOGIES

RECORDED NA

PROBE USED NA

REVIEWED BY Charlotte Rittler

SHOWS 100%
AXIAL FLAW
LOC B



LOC A
SHOWS 100%
THRU HOLE

SHOWS 60% ID
CIRC FLAW
LOC D



LOC C
SHOWS 100%
CIRC FLAW

SHOWS 60% OD
AXIAL FLAW
LOC F



LOC E
SHOWS 60% ID
AXIAL FLAW

SHOWS 40% ID
CIRC FLAW
LOC H



LOC G
SHOWS 60% OD
CIRC FLAW

SHOWS 40% OD
AXIAL FLAW
LOC J



LOC I
SHOWS 40% ID
AXIAL FLAW

SHOWS 40% OD
CIRC FLAW
LOC L



LOC K
SHOWS 40% OD
CIRC FLAW

SHOWS 20% ID
CIRC FLAW
LOC M



LOC N
SHOWS 20% ID
AXIAL FLAW

NOTE:

3/4" (STOCK) TUBING

UNLESS OTHERWISE SPECIFIED

DIM ARE IN INCHES

TOLERANCES

DECIMAL: FRACT 1/16

XXXX ± .003

XXX ± .015

XX ± .050

X ± .003

ANGULAR .3°

FINISH

DIST 000

DRAWN

K ZEGKE

CHECK

2.0R

DESIGN

12/10/96

APVD DA

12/10/96

DATE

12/03/96

ZETEC INC

POST OFFICE BOX 400 ASHQUAH WASHINGTON
98027-0400 USA TELEPHONE (206) 387-5310

TITLE

G.T. CALIBRATION STANDARD

D=4040-1-A P=3435

SIMILAR

DWG NO

2-415-1059

SCALE NTS

USED BY

2-415-0016

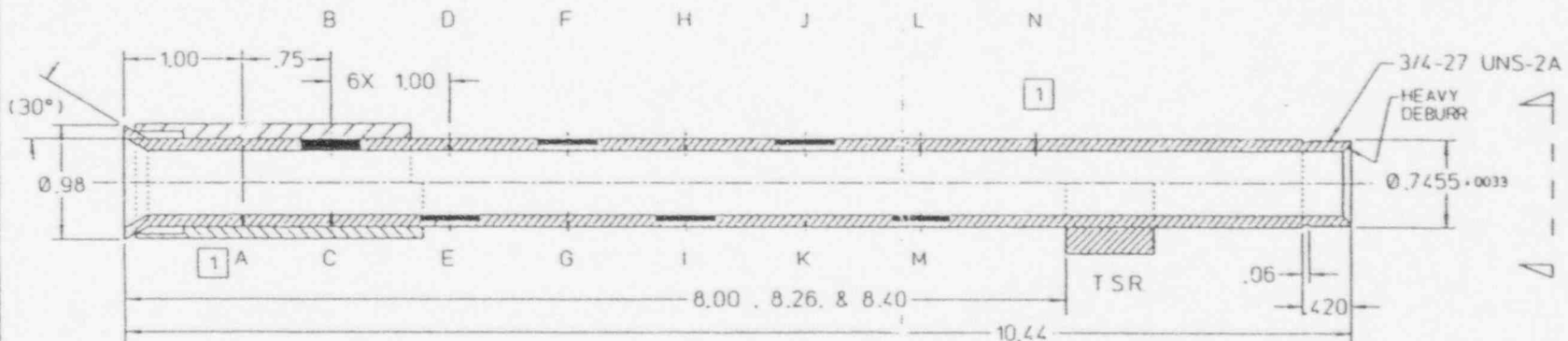
SHT 1 OF 3

ALL AXIAL AND CIRC. FLAWS
ARE EDM .005 ±.002 WIDE X .500 LONG

REVISIONS		REV STATUS		REVISIONS										APVD	CK	DR
LTR	DATE	DESCRIPTION														
3	2	SHEET														

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
PHYSICALLY MEAS DEPTH	THRU	THRU	THRU	.0300	.0295	.0310	.0305	.0200	.0205	.0210	.0205	.0105	.0105	THRU
DEPTH IN % OF WALL	100%	100%	100%	59%	58%	61%	60%	39%	40%	41%	40%	21%	21%	100%

SHOWS 100%
THRU HOLE
LOC N



ORIENTATION
OF ALL FLAWS

1 0.052±.003 IN STD. ≤ .75 DIA
0.067±.003 IN STD. > .75 DIA

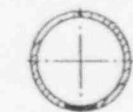
MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .051
NOMINAL WALL THK .049
HEAT LOT NO. 752493
TEST FREQ USED NA
SERIAL NO Z-15594
PO NO 51148
REL NO NA

QUALITY REL NO NA
DATE MFG 12-16-96
O A INSP [Signature]
CUSTOMER ROCK RIDGE TECHNOLOGIES
RECORDED NA
PROBE USED NA
REVIEWED BY Charlotte Butler

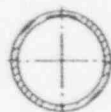
SHOWS 100%
AXIAL FLAW
LOC B



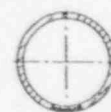
LOC A
SHOWS 100%
THRU HOLE



LOC C
SHOWS 100%
CIRC FLAW



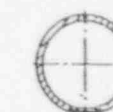
LOC E
SHOWS 60% ID
AXIAL FLAW



LOC G
SHOWS 60% OD
CIRC FLAW



LOC I
SHOWS 40% ID
AXIAL FLAW



LOC K
SHOWS 40% OD
CIRC FLAW



LOC M
SHOWS 20% ID
AXIAL FLAW

NOTE:

3/4" (stock) TUBING

UNL OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT .1/16
XXXX ± .003
XXX ± .015
XX ± .050
X ± .003
ANGULAR .3°
FINISH DIST 000

DRAWN
K ZEGKE
CHECK
[Signature]
DESIGN
[Signature]
APVD OA
[Signature]

DATE
12/03/96
12/11/96
12/10/96

ZETEC INC

POST OFFICE BOX 110 15500 WASHINGTON
98027-0110 USA TELEPHONE (206) 392-5316

TITLE
G.T. CALIBRATION STANDARD
D=4040-1-A P=3435
SIMILAR DWG NO
2-415-1059
SCALE NTS USED
2-415-0016 SHT 1 OF 3