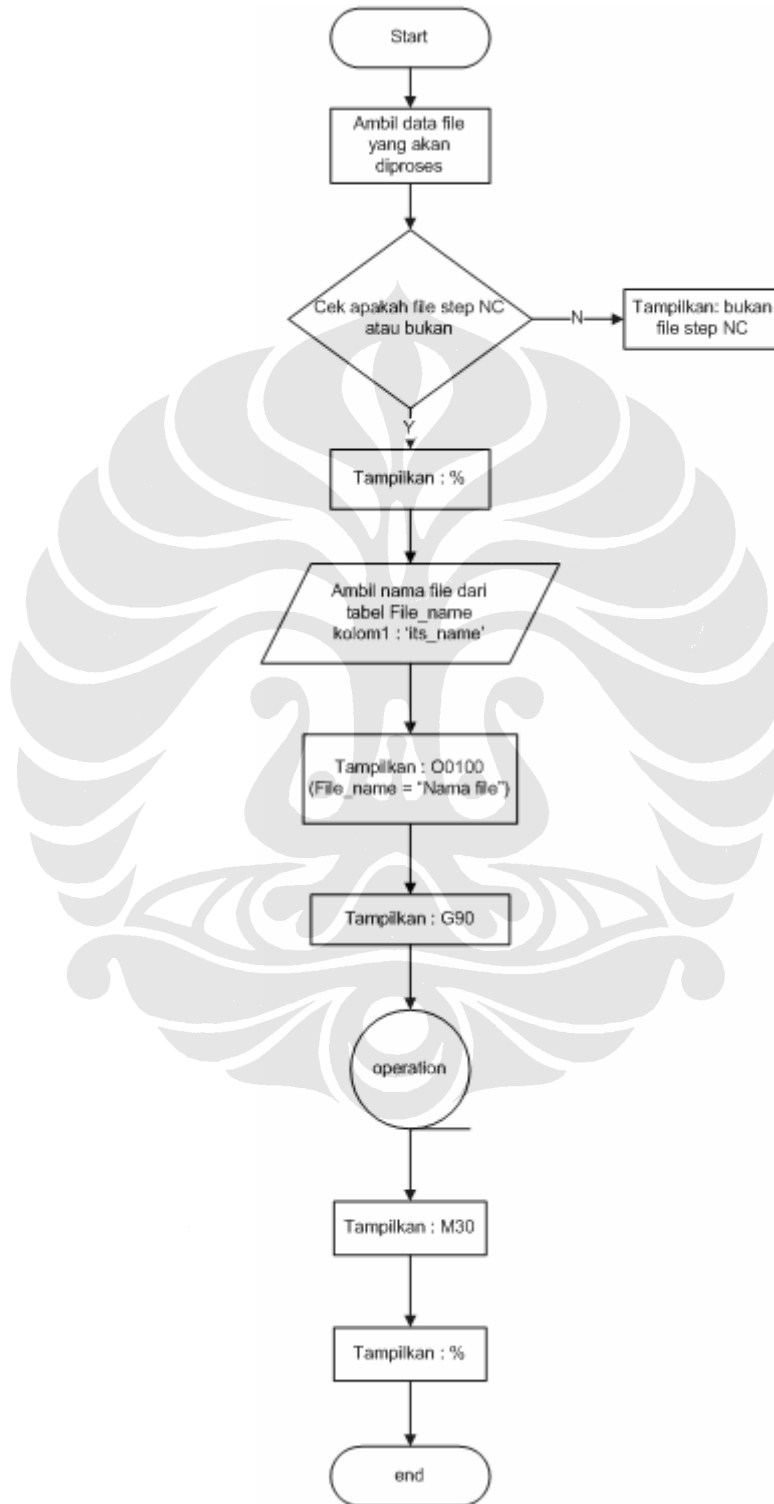
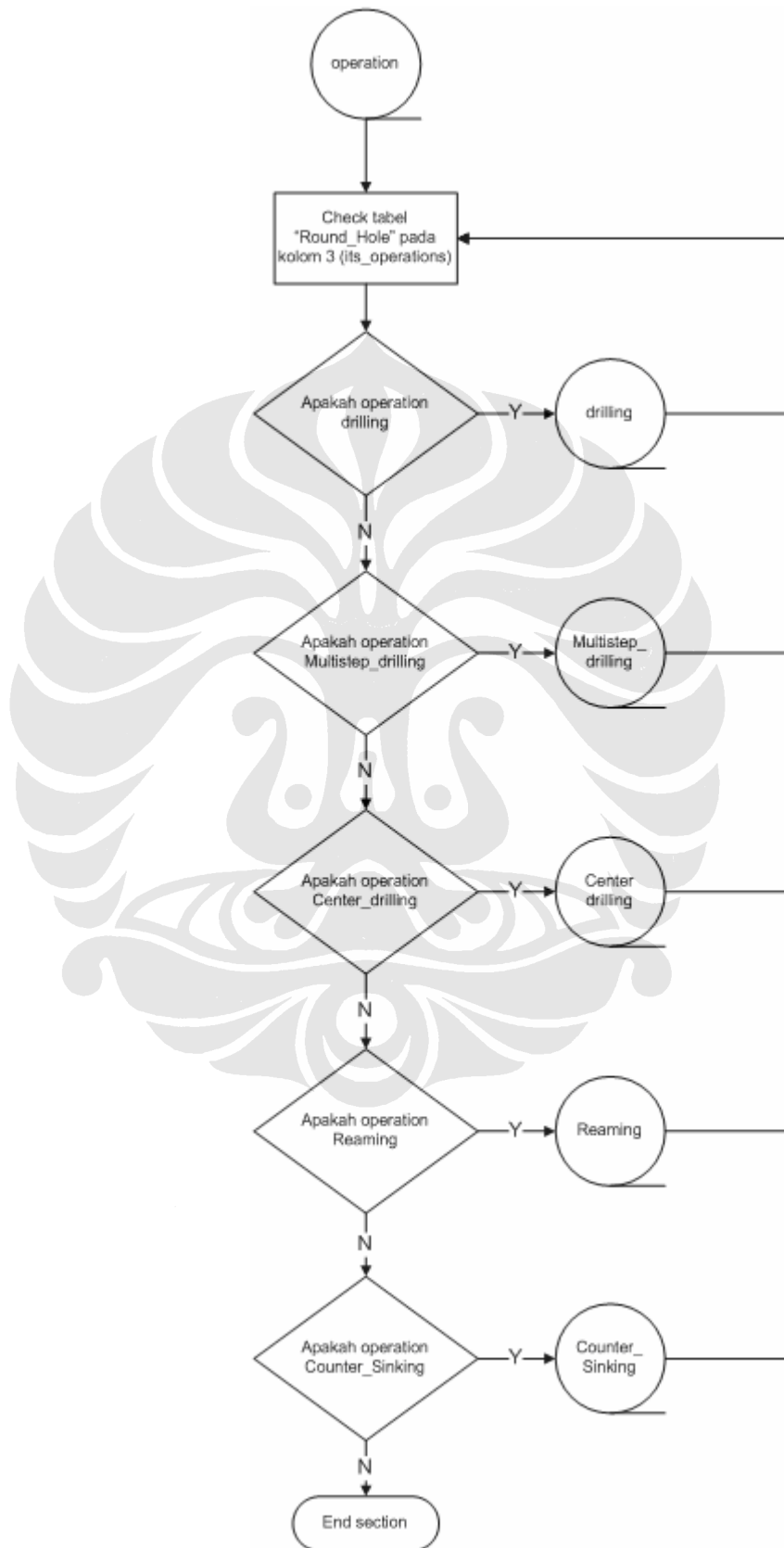


LAMPIRAN

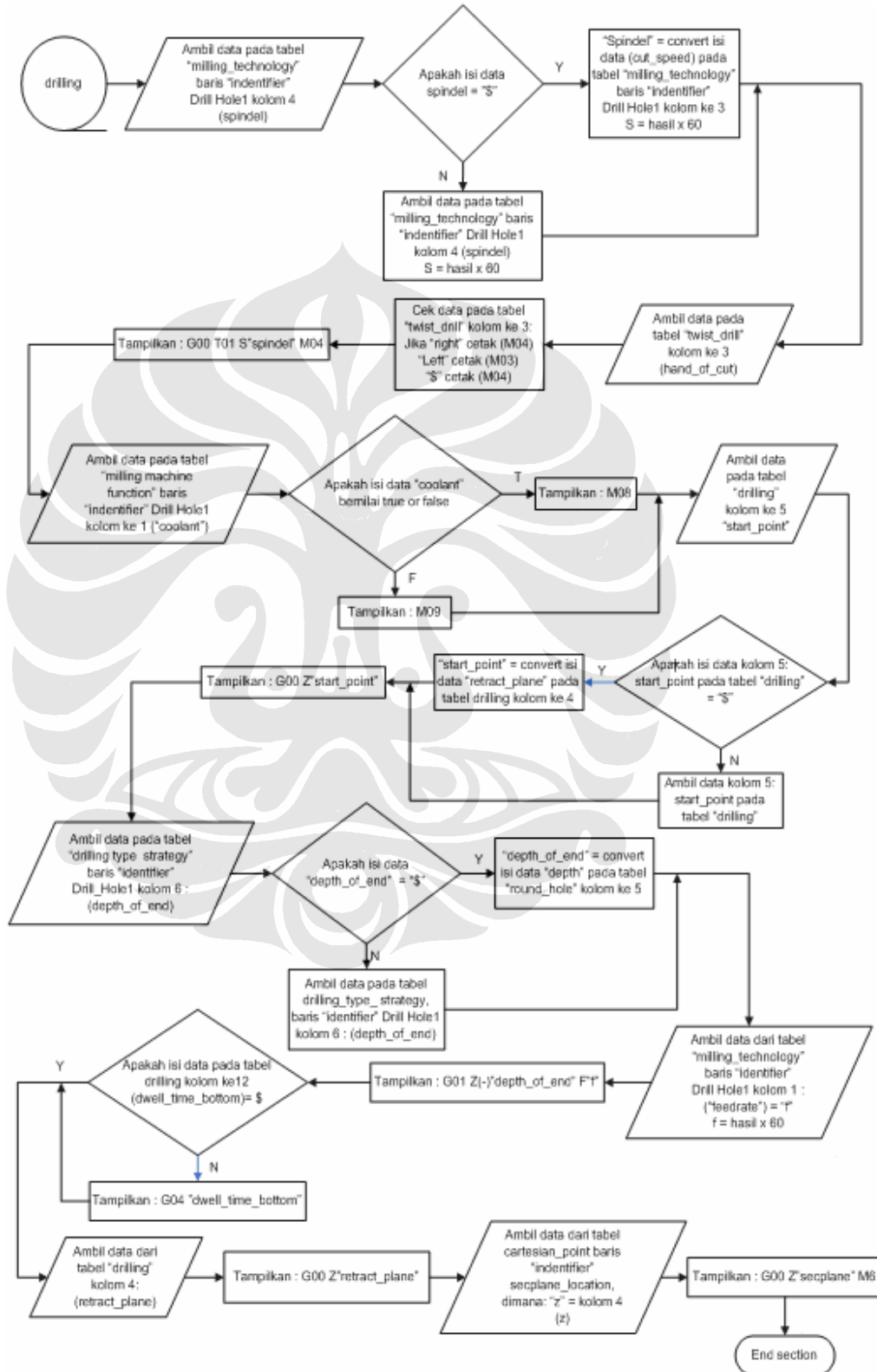
Lampiran 1. *Rule Main Program*



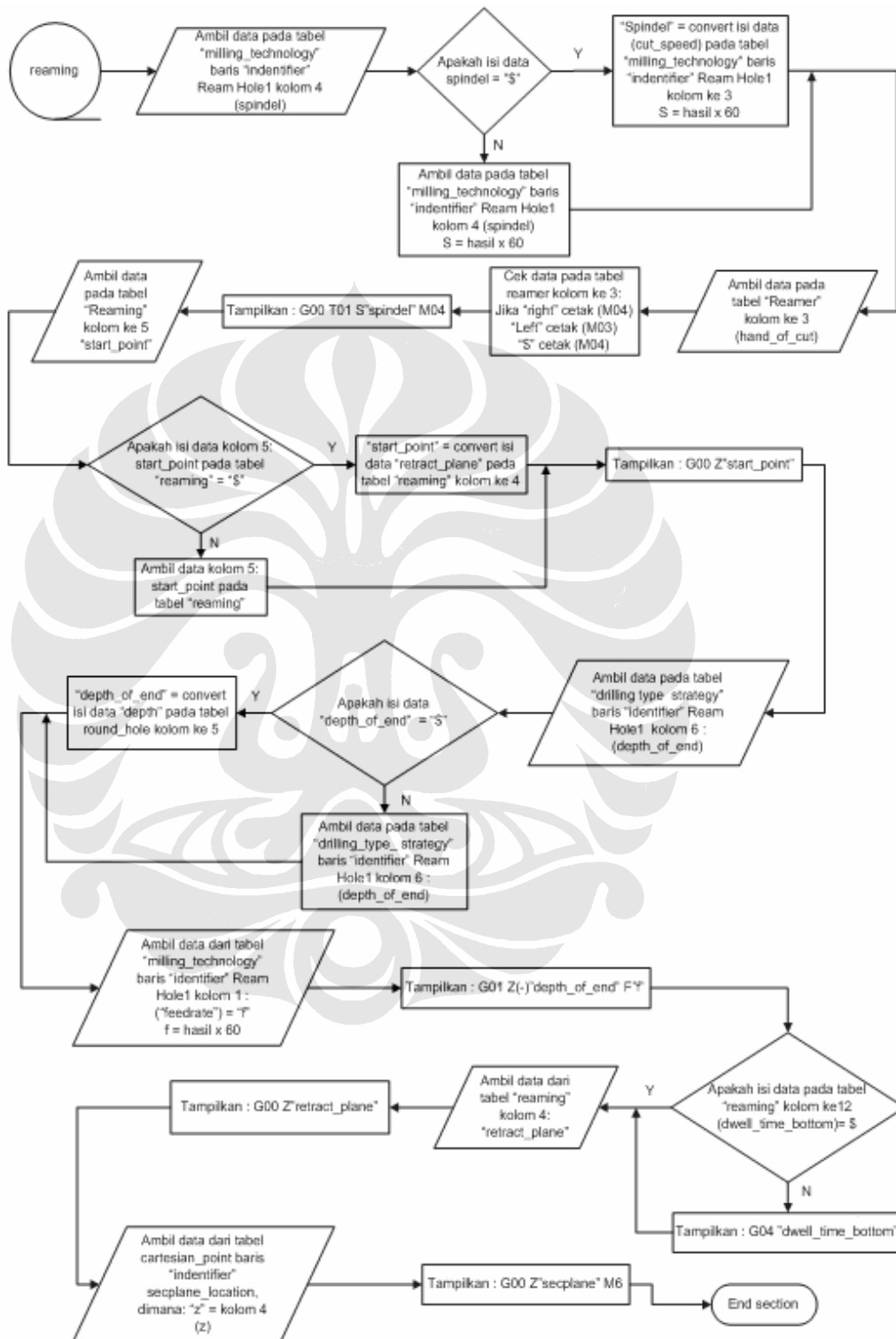
Lampiran 2. Rule Operation



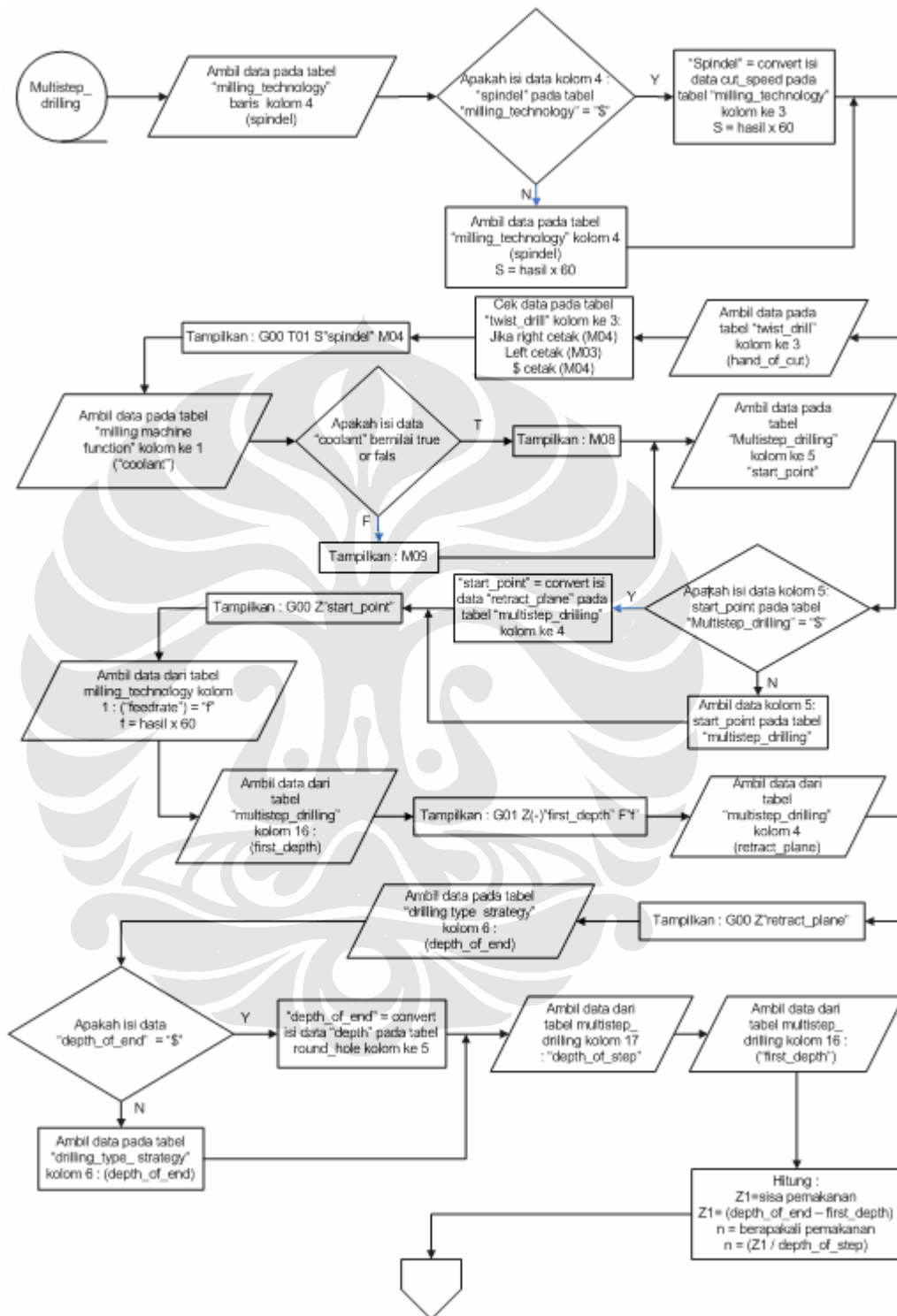
Lampiran 3. Rule Drilling

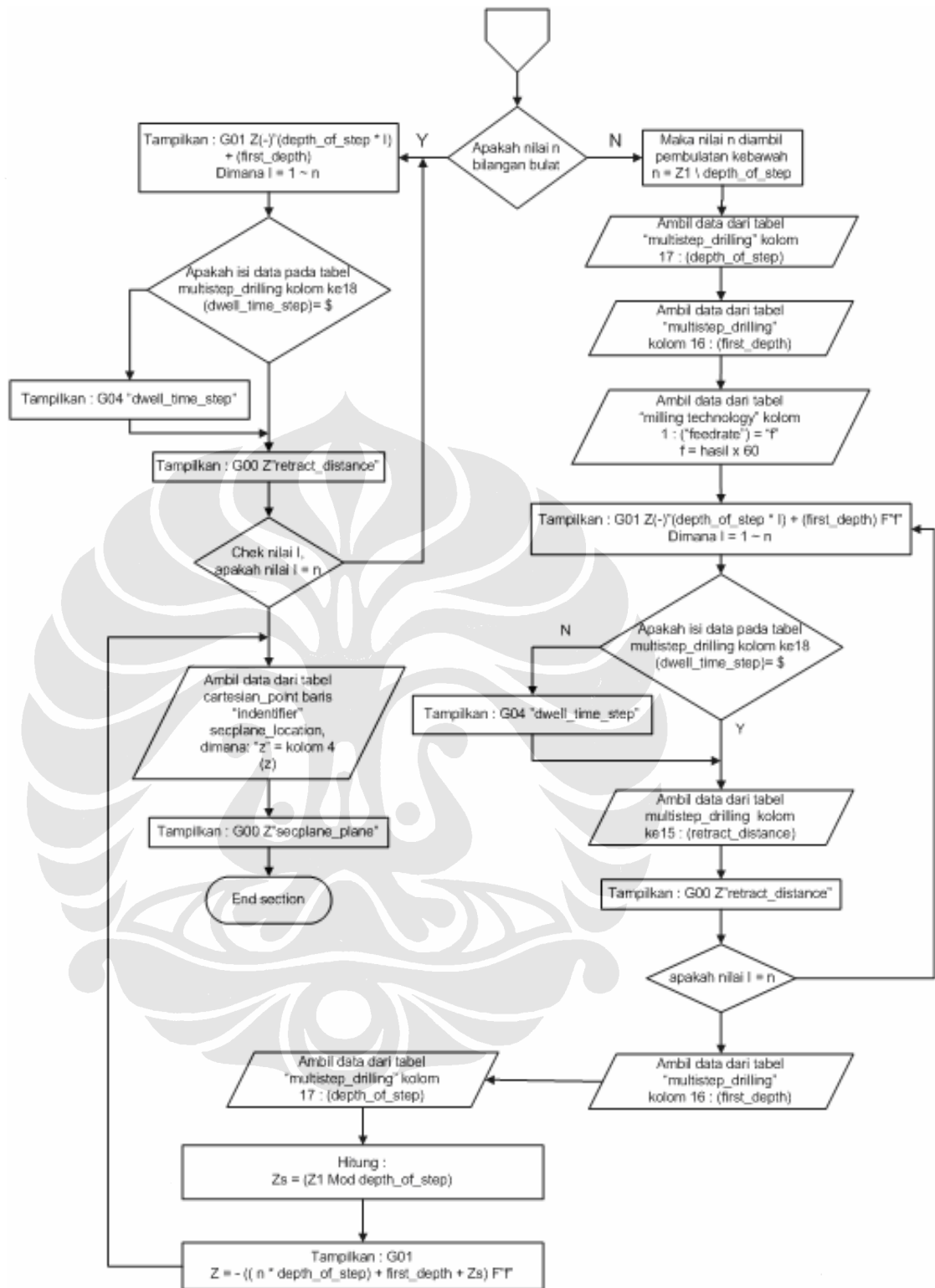


Lampiran 4. Rule Reaming

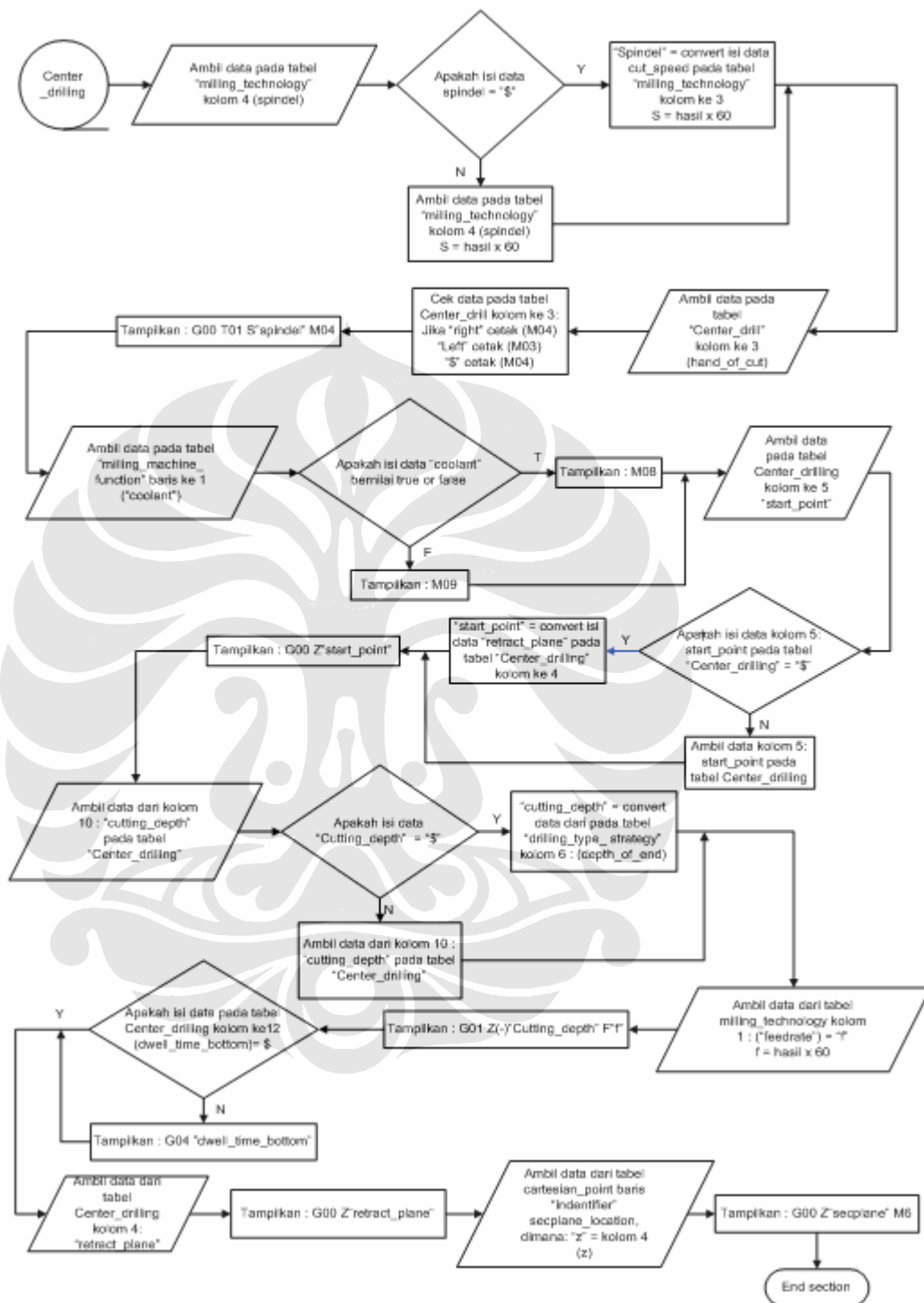


Lampiran 5. Rule Multistep_Drilling

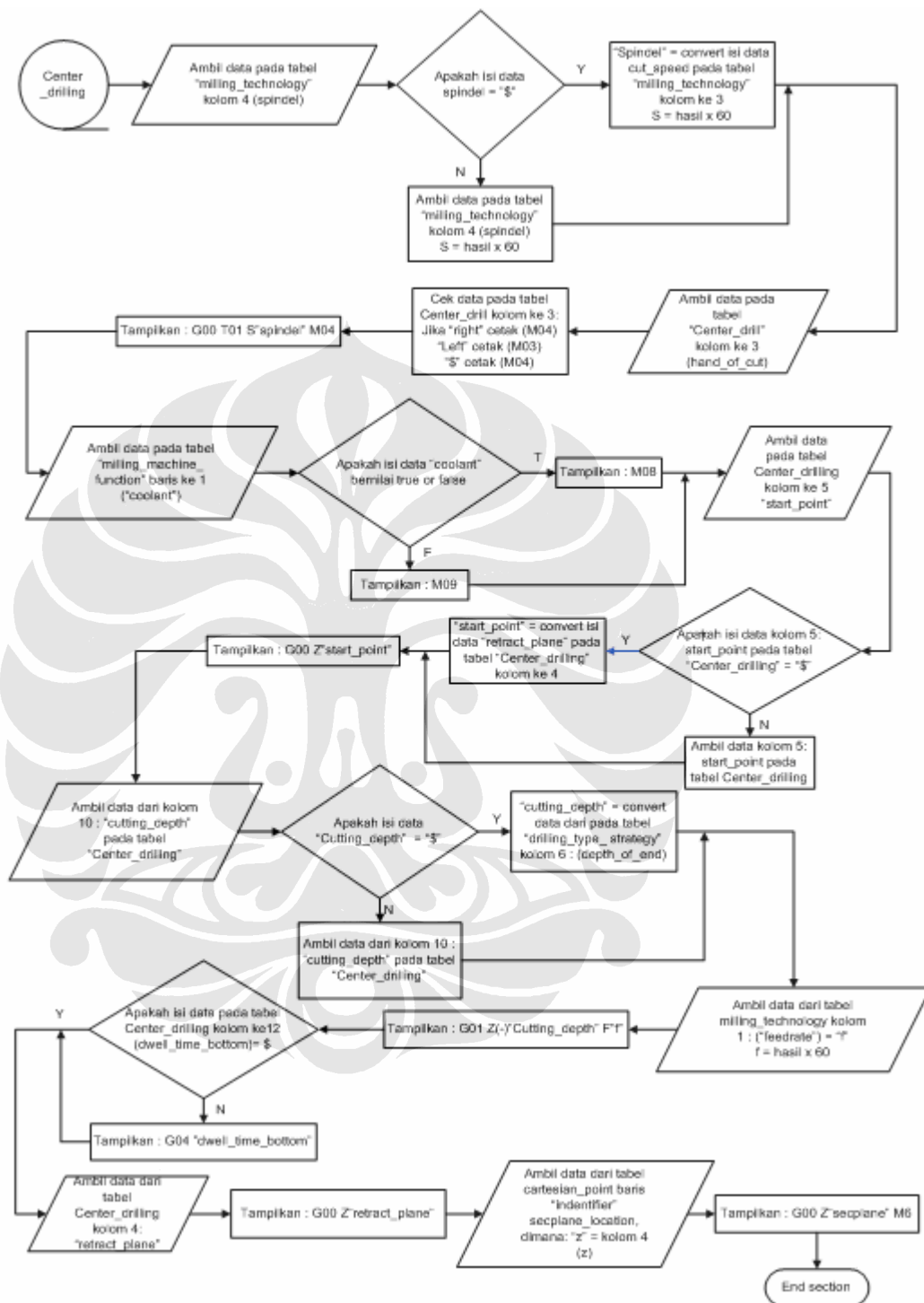




Lampiran 6. Rule Center_Drilling



Lampiran 7. Rule Counter_Sinking



Lampiran 8. Rule Search and Send Data

Tabel	Entity	Atribut	Go to	Pengambilan data & Kirim ke database
Project	Project	(1,2,3,4,5,6)	-	}} Ambil data
Workplan	Project	(1,2,3,4,5,6)	2	}} Ambil data
	Workplan	(1,2,3,4,5)	-	
Workpice	Project	(1,2,3,4,5,6)	3	}} Ambil data
	Workpiece	(1,2,3,4,5,6,7)	-	
Setup	Project	(1,2,3,4,5,6)	2	}} Ambil data
	Workplan	(1,2,3,4,5)	4	
	Setup	(1,2,3,4)	-	
Workpice setup	Project	(1,2,3,4,5,6)	2	}} Ambil data
	Workplan	(1,2,3,4,5)	4	
	Setup	(1,2,3,4)	4	
	Workpiece setup	(1,2,3,4,5)	-	
Material	Project	(1,2,3,4,5,6)	3	}} Ambil data
	Workpiece	(1,2,3,4,5,6,7)	2	
	Material	(1,2,3)	-	
Machining workingstep	Project	(1,2,3,4,5,6)	2	}} Ambil data
	Workplan	(1,2,3,4,5)	2	
	Machining workingstep	(1,2,3,4)	-	
Round hole	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	-	}} Ambil data
Center drilling	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3a	}} Ambil data
	Center drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	-	
Reaming	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3c	}} Ambil data
	Reaming	(1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17)	-	
Drilling	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3b	}} Ambil data
	Drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	-	
Multistep drilling	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3d	}} Ambil data
	Multistep drilling	(1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17,18)	-	
Counter sinking	Round hole	1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3e	}} Ambil data
	Counter sinking	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	-	

Tabel	Entity	Atribut	Go to	Pengambilan data & Kirim ke database
Drilling type strategy (for center drilling)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3a	}} Ambil data
	Center drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	14	
	Drilling type strategy	(1,2,3,4,5,6,7)	-	
Drilling type strategy (for Reaming)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3c	}} Ambil data
	Reaming	(1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17)	14	
	Drilling type strategy	(1,2,3,4,5,6,7)	-	
Drilling type strategy (for Drilling)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3b	}} Ambil data
	Drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	14	
	Drilling type strategy	(1,2,3,4,5,6,7)	-	
Drilling type strategy (for Multistep drilling)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3d	}} Ambil data
	Multistep drilling	(1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17,18)	14	
	Drilling type strategy	(1,2,3,4,5,6,7)	-	
Drilling type strategy (for Counter sinking)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3e	}} Ambil data
	Counter sinking	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	14	
	Drilling type strategy	(1,2,3,4,5,6,7)	-	
Milling technology (for Center drilling)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3a	}} Ambil data
	Center drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	7	
	Milling technology	(1,2,3,4,5,6,7,8,9,10)	-	
Milling technology (for Drilling)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3b	}} Ambil data
	Drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	7	
	Milling technology	(1,2,3,4,5,6,7,8,9,10)	-	
Milling technology (for Reaming)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3c	}} Ambil data
	Reaming	(1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17)	7	
	Milling technology	(1,2,3,4,5,6,7,8,9,10)	-	

Tabel	Entity	Atribut	Go to	Pengambilan data & Kirim ke database
Milling technology (for Multistep drilling)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3d	}} Ambil data
	Multistep drilling	(1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17,18)	7	
	Milling technology	(1,2,3,4,5,6,7,8,9,10)	-	
Milling technology (for Counter sinking)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3e	}} Ambil data
	Counter sinking	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	7	
	Milling technology	(1,2,3,4,5,6,7,8,9,10)	-	
Milling machine functions (for Center drilling)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3a	}} Ambil data
	Center drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	8	
	Milling machine functions	(1,2,3,4,5,6,7,8,9,10,11)	-	
Milling machine functions (for Drilling)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3b	}} Ambil data
	Drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	8	
	Milling machine functions	(1,2,3,4,5,6,7,8,9,10,11)	-	
Milling machine functions (for Reaming)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3c	}} Ambil data
	Reaming	(1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17)	8	
	Milling machine functions	(1,2,3,4,5,6,7,8,9,10,11)	-	
Milling machine functions (Multistep drilling)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3d	}} Ambil data
	Multistep drilling	(1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17,18)	8	
	Milling machine functions	(1,2,3,4,5,6,7,8,9,10,11)	-	
Milling machine functions (Counter sinking)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3e	}} Ambil data
	Counter sinking	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	8	
	Milling machine functions	(1,2,3,4,5,6,7,8,9,10,11)	-	

Tabel	Entity	Atribut	Go to	Pengambilan data & Kirim ke database
Milling cutting tool (for Center drilling)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3a	}} Ambil data
	Center drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	6	
	Milling cutting tool	(1,2,3,4,5,6)	-	
Milling cutting tool (for Drilling)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3b	}} Ambil data
	Drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	6	
	Milling cutting tool	(1,2,3,4,5,6)	-	
Milling cutting tool (for Reaming)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3c	}} Ambil data
	Reaming	(1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17)	6	
	Milling cutting tool	(1,2,3,4,5,6)	-	
Milling cutting tool (for Multistep drilling)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3d	}} Ambil data
	Multistep drilling	(1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17,18)	6	
	Milling cutting tool	(1,2,3,4,5,6)	-	
Milling cutting tool (for Counter sinking)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3e	}} Ambil data
	Counter sinking	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	6	
	Milling cutting tool	(1,2,3,4,5,6)	-	
Twist drill	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3b	}} Ambil data
	Drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	6	
	Milling cutting tool	(1,2,3,4,5,6)	2	
	Twist drill	(1,2,3,4,5,6)	-	
	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3d	}} Ambil data
	Multistep drilling	(1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17,18)	6	
	Milling cutting tool	(1,2,3,4,5,6)	2	
	Twist drill	(1,2,3,4,5,6)	-	

Tabel	Entity	Atribut	Go to	Pengambilan data & Kirim ke database
Reamer	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3c	}} Ambil data
	Reaming	(1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17)	6	
	Milling cutting tool	(1,2,3,4,5,6)	2	
	Reamer	(1,2,3,4,5,6)	-	
Center drill	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3a	}} Ambil data
	Center drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	6	
	Milling cutting tool	(1,2,3,4,5,6)	2	
	Center drill	(1,2,3,4,5,6)	-	
Counter sink	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3e	}} Ambil data
	Counter sinking	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	6	
	Milling cutting tool	(1,2,3,4,5,6)	2	
	Counter sink	(1,2,3,4,5,6,7)	-	
Milling tool dimension (for Twist drill)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3b	}} Ambil data
	Drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	6	
	Milling cutting tool	(1,2,3,4,5,6)	2	
	Twist drill	(1,2,3,4,5,6)	2	
	Milling tool dimension	(1,2,3,4,5,6,7,8)	-	
Milling tool dimension (for Center drill)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3a	}} Ambil data
	Center drilling	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	6	
	Milling cutting tool	(1,2,3,4,5,6)	2	
	Center drill	(1,2,3,4,5,6)	2	
	Milling tool dimension	(1,2,3,4,5,6,7,8)	-	
Milling tool dimension (for Reamer)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3c	}} Ambil data
	Reaming	(1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15,16,17)	6	
	Milling cutting tool	(1,2,3,4,5,6)	2	
	Reamer	(1,2,3,4,5,6)	2	
	Milling tool dimension	(1,2,3,4,5,6,7,8)	-	

Tabel	Entity	Atribut	Go to	Pengambilan data & Kirim ke database
Milling tool dimension (for Counter sink)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	3e	}} Ambil data
	Counter sinking	(1,2,3,4,5,6,7,8,9, 10,11,12,13,14)	6	
	Milling cutting tool	(1,2,3,4,5,6)	2	
	Counter sink	(1,2,3,4,5,6,7)	2	
	Milling tool dimension	(1,2,3,4,5,6,7,8)	-	
Axis2_placement_3D (for Security plane)	Project	(1,2,3,4,5,6)	2	}} Ambil data
	Workplan	(1,2,3,4,5)	2	
	Machining workingstep	(1,2,3,4)	2	
	Plane	(1,2)	2	
	axis2_placement_3D	(1,2,3,4)	-	
Axis2_placement_3D (for Workpiece setup)	Project	(1,2,3,4,5,6)	2	}} Ambil data
	Workplan	(1,2,3,4,5)	4	
	Setup	(1,2,3,4)	4	
	Workpiece setup	(1,2,3,4,5)	2	
	axis2_placement_3D	(1,2,3,4)	-	
Axis2_placement_3D (for feature depth)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	5	}} Ambil data
	Plane	(1,2)	2	
	axis2_placement_3D	(1,2,3,4)	-	
Axis direction (for Security plane)	Project	(1,2,3,4,5,6)	2	}} Ambil data
	Workplan	(1,2,3,4,5)	2	
	Machining workingstep	(1,2,3,4)	2	
	Plane	(1,2)	2	
	axis2_placement_3D	(1,2,3,4)	3	
	Direction	(1,2)	-	
Axis direction (for Workpiece setup)	Project	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	2	}} Ambil data
	Workplan	(1,2,3,4,5)	4	
	Setup	(1,2,3,4)	4	
	Workpiece setup	(1,2,3,4,5)	2	
	axis2_placement_3D	(1,2,3,4)	3	
	Direction	(1,2)	-	

Tabel	Entity	Atribut	Go to	Pengambilan data & Kirim ke database
Axis direction (for feature depth)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	5	}} Ambil data
	Plane	(1,2)	2	
	axis2_placement_3D	(1,2,3,4)	3	
	Direction	(1,2)	-	
Cartesian point (for Security plane)	Project	(1,2,3,4,5,6)	2	}} Ambil data
	Workplan	(1,2,3,4,5)	2	
	Machining workingstep	(1,2,3,4)	2	
	Plane	(1,2)	2	
	axis2_placement_3D	(1,2,3,4)	2	
	Cartesian point	(1,2)	-	
Cartesian point (for Workpiece setup)	Project	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	2	}} Ambil data
	Workplan	(1,2,3,4,5)	4	
	Setup	(1,2,3,4)	4	
	Workpiece setup	(1,2,3,4,5)	2	
	axis2_placement_3D	(1,2,3,4)	2	
	Cartesian point	(1,2)	-	
Cartesian point (for feature depth)	Round hole	(1,2,(3a,3b,3c,3d,3e), 4,5,6,7,8)	5	}} Ambil data
	Plane	(1,2)	2	
	axis2_placement_3D	(1,2,3,4)	2	
	Cartesian point	(1,2)	-	

Lampiran 9. FILE STEP-NC 'EXAMPLE 1.STP'

```
ISO-10303-21;
HEADER;
FILE_DESCRIPTION(('EXAMPLE OF NC PROGRAMME FOR TURNING; COMPLEX
DESIGN.'),'1');
FILE_NAME('EXAMPLE1.STP',$(ISO14649),('),'SUH','POSTECH','KOREA');
FILE_SCHEMA(('MACHINING_SCHEMA','TURNING_SCHEMA'));
ENDSEC;
DATA;
(* *****)
(* **** Workpiece definition **** *)
#1=WORKPIECE('SIMPLE WORKPIECE',#2,0,0.01,$,$,$,());
#2=MATERIAL('ST-50',STEEL,'(#3));
#3=PROPERTY_PARAMETER('E=200000N/M2');
(* *****)
(* **** Manufacturing features **** *)
#10=REVOLVED_FLAT('REVOLVED FLAT 1',#1,(#22,#23),#172,#176,21.0,#178);
#11=REVOLVED_FLAT('REVOLVED FLAT 2',#1,(#31,#32),#183,#187,12.0,#189);
#12=GENERAL_REVOLUTION('GENERAL REVOLUTION
1',#1,(#20,#21),#194,#198,21.0,#200);
#13=ROUND_HOLE('HOLE1 FLAT BOTTOM',#1,(#26,#27),#207,#215,#216,$,#217);
#14=OUTER_DIAMETER('OUTER DIAMETER 1',#1,(#29,#30),#218,#222,#223,224);
#15=GROOVE('GROOVE 1',#1,(#24,#25),#226,#230,35.0,#232);
#16=GROOVE('CUT_IN',#1,(#33),#236,#240,18.4,#242);
(* **** Turning operations **** *)
#20=CONTOURING_ROUGH($,$,'ROUGH GENERAL
REVOLUTION1',30.000,$,#280,#61,#60,#130,#130,#131,0.5);
#21=CONTOURING_FINISH($,$,'ROUGH GENERAL
REVOLUTION1',30.000,$,#280,#61,#60,#130,#130,#132,0.0);
#22=FACING_ROUGH($,$,'ROUGH CIRCULAR FACE
2',50.000,$,#280,#63,#60,#133,#134,#135,0.500);
#23=FACING_FINISH($,$,'FINISH CIRCULAR FACE
2',50.000,$,#280,#63,#60,#133,#134,#136,0.0);
#24=GROOVING_ROUGH($,$,'ROUGH GROOVE
1',30.000,$,#285,#65,#60,#137,#137,#138,$,0.500);
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#25=GROOVING_FINISH($,$,'FINISH GROOVE
1',30.000,$,#285,#65,#60,#137,#137,#139,$,0.0);
#26=DRILLING($,$,'DRILL HOLE1',30.000,$,#289,#68,#67,$,$,$,$,#140);
#27=REAMING($,$,'REAM HOLE1',30.000,$,#293,#69,#67,$,$,$,$,#141,.T.,$,$);
#29=CONTOURING_ROUGH($,$,'ROUGH OUTER DIAMETER
1',30.000,$,#280,#61,#60,#130,#130,#131,0.5);
#30=CONTOURING_FINISH($,$,'FINISH OUTER DIAMETER
1',30.000,$,#280,#61,#60,#130,#130,#132,0.0);
#31=FACING_ROUGH($,$,'ROUGH CIRCULAR FACE
1',50.000,$,#280,#63,#60,#133,#134,#135,0.500);
#32=FACING_FINISH($,$,'ROUGH CIRCULAR FACE
1',50.000,$,#280,#63,#60,#133,#134,#136,0.0);
#33=CUTTING_IN($,$,'CUTTING_IN 1',50.000,$,#297,#70,#60,#142,#142,#143,$,0.0);
(* ***** *)
(* ***** Project ***** *)
#34=PROJECT('TURNING EXAMPLE 1',#35,(#1),$,$,$);
#35=WORKPLAN('MAIN WORKPLAN',(#36,#37),$,#52,$);
#36=WORKPLAN('WORKPLAN FOR SETUP1',(#38,#39,#40,#41,#42,#43,#44,#45),$,$,$);
#37=WORKPLAN('WORKPLAN FOR SETUP2',(#47,#48,#49,#50,#51),$,#54,$);
#38=MACHINING_WORKINGSTEP('WS ROUGH CIRCULAR_FACE 2',#56,#11,#22);
#39=MACHINING_WORKINGSTEP('WS FINISH CIRCULAR_FACE 2',#56,#11,#23);
#40=MACHINING_WORKINGSTEP('WS ROUGH GENERAL_REVOLUTION
1',#56,#12,#20);
#41=MACHINING_WORKINGSTEP('WS FINISH GENERAL_REVOLUTION
1',#56,#12,#21);
#42=MACHINING_WORKINGSTEP('WS ROUGH GROOVE 1',#56,#15,#24);
#43=MACHINING_WORKINGSTEP('WS FINISH GROOVE 1',#56,#15,#25);
#44=MACHINING_WORKINGSTEP('WS DRILLING',#56,#13,#26);
#45=MACHINING_WORKINGSTEP('WS REAMING',#56,#13,#27);
#47=MACHINING_WORKINGSTEP('WS ROUGH CIRCULAR_FACE 1',#56,#10,#30);
#48=MACHINING_WORKINGSTEP('WS FINISH CIRCULAR_FACE 1',#56,#10,#31);
#49=MACHINING_WORKINGSTEP('WS ROUGH OUTER_DIAMETER 2',#56,#14,#28);
#50=MACHINING_WORKINGSTEP('WS FINISH OUTER_DIAMETER 2',#56,#14,#29);
#51=MACHINING_WORKINGSTEP('WS FINISH CUT_IN 1',#56,#16,#32);
#52=SETUP('SETUP 1',#103,#56,(#53));
#53=WORKPIECE_SETUP(#1,#107,$,$,$);
#54=SETUP('SETUP 2',#111,#56,(#55));
#55=WORKPIECE_SETUP(#1,#115,$,$,$);
#56=PLANE('SECURITY PLANE',#119);

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(* ***** *)
(* ***** Functions / Technology ***** *)
#60=TURNING_MACHINE_FUNCTIONS(.T.,$,,$(),.F.,$,,$(),$,,$);
#61=TURNING_TECHNOLOGY($,.TCP.,#62,0.300,.F.,.F.,.F.,$);
#62=CONST_SPINDLE_SPEED(500);
#63=TURNING_TECHNOLOGY($,.TCP.,#64,0.300,.F.,.F.,.F.,$);
#64=CONST_SPINDLE_SPEED(500);
#65=TURNING_TECHNOLOGY($,.TCP.,#66,0.300,.F.,.F.,.F.,$);
#66=CONST_SPINDLE_SPEED(200);
#67=MILLING_MACHINE_FUNCTIONS(.T.,$,,$.F.,$(),.T.,$,,$());
#68=MILLING_TECHNOLOGY(0.030,.TCP.,$,16.000,$.F.,.F.,.F.,$);
#69=MILLING_TECHNOLOGY(0.030,.TCP.,$,18.000,$.F.,.F.,.F.,$);
#70=TURNING_TECHNOLOGY($,.TCP.,#71,0.300,.F.,.F.,.F.,$);
#71=CONST_SPINDLE_SPEED(100);
(* ***** *)
(* ***** Strategies ***** *)
#130=PLUNGE_RAMP($,45.000);
#131=UNIDIRECTIONAL_TURNING($,$,(3.000),$,$,$,$,2.000,$,$);
#132=UNIDIRECTIONAL_TURNING($,$,(0.500),$,$,$,$,$,$);
#133=PLUNGE_RAMP($,30.000);
#134=PLUNGE_RAMP($,40.000);
#131=UNIDIRECTIONAL_TURNING($,$,(3.000),$,$,$,$,2.000,$,$);
#132=UNIDIRECTIONAL_TURNING($,$,(0.500),$,$,$,$,$,$);
#137=PLUNGE_TOOL_AXIS($);
#138=MULTISTEP_GROOVING_STRATEGY($,.F.,(3.000),$,$,5.0,3.0);
#139=CONTOUR_TURNING($,.F.,(0.500),$,$,$);
#140=DRILLING_TYPE_STRATEGY(75.000,50.000,5.000,50.000,75.000,40.000);
#141=DRILLING_TYPE_STRATEGY($,$,$,$,$);
#142=PLUNGE_TOOL_AXIS($);
#143=GROOVING_STRATEGY($,.T.,(1.0),$,$,5.000);
(* ***** *)
(* ***** Placements / Lengths ***** *)
#103=AXIS2_PLACEMENT_3D('SETUP 1',#104,#105,#106);
#104=CARTESIAN_POINT('SETUP1: LOCATION',(0.000,0.000,0.000));
#105=DIRECTION('AXIS',(1.000,0.000,0.000));
#106=DIRECTION('REF_DIRECTION',(0.000,0.000,1.000));
#107=AXIS2_PLACEMENT_3D('WORKPIECE',#108,#109,#110);
#108=CARTESIAN_POINT('WORKPIECE1: LOCATION',(0.000,0.000,0.000));
#109=DIRECTION('AXIS',(1.000,0.000,0.000));

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#110=DIRECTION('REF_DIRECTION',(0.000,0.000,1.000));
#111=AXIS2_PLACEMENT_3D('SETUP 2',#111,#112,#113);
#112=CARTESIAN_POINT('SETUP2: LOCATION',(0.000,0.000,0.000));
#113=DIRECTION('AXIS',(1.000,0.000,0.000));
#114=DIRECTION('REF_DIRECTION',(0.000,0.000,1.000));
#115=AXIS2_PLACEMENT_3D('WORKPIECE1',#116,#117,#118);
#116=CARTESIAN_POINT('WORKPIECE1: LOCATION',(0.000,0.000,0.000));
#117=DIRECTION('AXIS',(1.000,0.000,0.000));
#118=DIRECTION('REF_DIRECTION',(0.000,0.000,1.000));
#119=AXIS2_PLACEMENT_3D('SECURITY PLANE',#120,#121,#122);
#120=CARTESIAN_POINT('SECPLANE: LOCATION',(0.000,0.000,50.000));
#121=DIRECTION('AXIS',(1.000,0.000,0.000));
#122=DIRECTION('REF_DIRECTION',(0.000,0.000,1.000));
#172=AXIS2_PLACEMENT_3D('PLACEMENT END FACE 1',#173,#174,#175);
#173=CARTESIAN_POINT('END FACE 1: LOCATION',(0.000,0.000,-2.500));
#174=DIRECTION('AXIS',(1.000,0.000,0.000));
#175=DIRECTION('REF_DIRECTION',(0.000,0.000,1.000));
#176=DIRECTION('MATERIAL_SIDE',0.000,0.000,-1.000);
#178=LINEAR_PROFILE('REVOLVED_FLAT_RADIUS',#179,21.000);
#179=AXIS2_PLACEMENT_3D('PLACEMENT END FACE 1',#180,#181,#182);
#180=CARTESIAN_POINT('END FACE 1: LOCATION',(0.000,0.000,0.000));
#181=DIRECTION('AXIS',(1.000,0.000,0.000));
#182=DIRECTION('REF_DIRECTION',(0.000,0.000,1.000));
#183=AXIS2_PLACEMENT_3D('PLACEMENT REVOLVED FLAT 2',#73,#74,#75);
#184=CARTESIAN_POINT('REVOLVED FLAT 2: LOCATION',(0.000,0.000,-2.500));
#185=DIRECTION('AXIS',(1.000,0.000,0.000));
#186=DIRECTION('REF_DIRECTION',(0.000,0.000,1.000));
#187=DIRECTION('MATERIAL_SIDE',(0.000,0.000,-1.000));
#189=LINEAR_PROFILE('REVOLVED_FLAT_RADIUS',#190,12.000);
#190=AXIS2_PLACEMENT_3D('LINEAR_PROFILE',#191,#192,#193);
#191=CARTESIAN_POINT('END FACE 1: LOCATION',(0.000,0.000,0.000));
#192=DIRECTION('AXIS',(0.000,0.000,1.000));
#193=DIRECTION('REF_DIRECTION',(1.000,0.000,0.000));
#194=AXIS2_PLACEMENT_3D('PLACEMENT GENERAL_REVOLUTION
1',#195,#196,#197);
#195=CARTESIAN_POINT('GENERAL_REVOLUTION: LOCATION',(0.000,0.000,-2.500));
#196=DIRECTION('AXIS',(1.000,0.000,0.000));
#197=DIRECTION('REF_DIRECTION',(0.000,0.000,1.000));
#198=DIRECTION('MATERIAL_SIDE',(-1.000,0.000,0.000));

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#200=GENERAL_PROFILE($,#201);
#201=POLYLINE(",(#202,#203,#204,#205,#206));
#202=CARTESIAN_POINT(",(21.000,0.000,0.000));
#203=CARTESIAN_POINT(",(23.000,0.000,5.000));
#204=CARTESIAN_POINT(",(23.000,0.000,55.000));
#205=CARTESIAN_POINT(",(35.000,0.000,55.000));
#206=CARTESIAN_POINT(",(35.000,0.000,95.000));
#207=AXIS2_PLACEMENT_3D('HOLE3',#208,#209,#210);
#208=CARTESIAN_POINT(",(0.,0.,0.));
#209=DIRECTION(",(1.,0.,0.));
#210=DIRECTION(",(0.,0.,1.));
#211=AXIS2_PLACEMENT_3D(",#212,#213,#214);
#212=CARTESIAN_POINT(",(0.000,0.000,-40.000));
#213=DIRECTION(",(0.000000,0.000000,1.000000));
#214=DIRECTION(",(1.000000,0.000000,0.000000));
#215=PLANE(",#211);
#216=TOLERANCE_LENGTH_MEASURE(15.0,#251);
#217=FLAT_HOLE_BOTTOM();
#218=AXIS2_PLACEMENT_3D('PLACEMENT OUTER_DIAMETER 1',#219,#220,#221);
#219=CARTESIAN_POINT('OUTER_DIAMETER 2: LOCATION',(0.000,0.000,-77.500));
#220=DIRECTION('AXIS',(1.000,0.000,0.000));
#221=DIRECTION('REF_DIRECTION',(0.000,0.000,1.000));
#222=TOLERANCE_LENGTH_MEASURE(56.000,#251);
#223=TOLERANCE_LENGTH_MEASURE(75.000,#251);
#224=DIAMETER_TAPER(#225);
#225=TOLERANCE_LENGTH_MEASURE(24.000,#251);
#226=AXIS2_PLACEMENT_3D('PLACEMENT GROOVE 1',#227,#228,#229);
#227=CARTESIAN_POINT('GROOVE 1:LOCATION',(0.000,0.000,-67.500));
#228=DIRECTION('AXIS',(1.000,0.000,0.000));
#229=DIRECTION('REF_DIRECTION',(0.000,0.000,1.000));
#230=DIRECTION('MATERIAL_SIDE',(-1.000,0.000,0.000));
#232=SQUARE_U_PROFILE(#233,#234,0,#235,0);
#233=TOLERANCE_LENGTH_MEASURE(20.000,#251);
#234=TOLERANCE_LENGTH_MEASURE(0.000,#251);
#235=TOLERANCE_LENGTH_MEASURE(0.000,#251);
#236=AXIS2_PLACEMENT_3D('PLACEMENT CUT_IN 1',#237,#238,#239);
#237=CARTESIAN_POINT('CUT_IN 1:LOCATION',(0.000,0.000,-67.500));
#238=DIRECTION('AXIS',(1.000,0.000,0.000));
#239=DIRECTION('REF_DIRECTION',(0.000,0.000,1.000));

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#240=DIRECTION('MATERIAL_SIDE',(-1.000,0.000,0.000));
#242=SQUARE_U_PROFILE(#243,#244,0.0,#245,0.0);
#243=TOLERANCE_LENGTH_MEASURE(3.000,#251);
#244=TOLERANCE_LENGTH_MEASURE(0.000,#251);
#245=TOLERANCE_LENGTH_MEASURE(0.000,#251);
#251=PLUS_MINUS_VALUE(0.100,0.100,3);
(* ***** *)
(* ***** Tools ***** *)
#280=TURNING_MACHINE_TOOL("#281,(#283),120,40,$);
#281=GENERAL_TURNING_TOOL(#282,.LEFT.,40,60,.CW.);
#282=TOOL_DIMENSION($,$,$,25,5,7,3,5,0.5,$);
#283=CUTTING_COMPONENT(0.000000,$,$,$);
#285=TURNING_MACHINE_TOOL("#286,(#288),120,40,$);
#286=GROOVE_TURNING_TOOL(#287,.LEFT.,40,60,.CW.,10.0,$);
#287=TOOL_DIMENSION($,$,$,$,$,$,$,0.5,$);
#288=CUTTING_COMPONENT(40.000,$,$,$);
#289=MILLING_CUTTING_TOOL('SPIRAL_DRILL_15MM',#290,(#292),90.000,$,$);
#290=TWIST_DRILL(#291,2,.RIGHT.,.F.,0.840);
#291=MILLING_TOOL_DIMENSION(15.000,31.000,0.100,45.000,2.000,5.000,8.000);
#292=CUTTING_COMPONENT(90.000,$,$,$);
#293=MILLING_CUTTING_TOOL('REAMER_15MM',#294,(#296),100.000,$,$);
#294=REAMER(#295,6,$,.F.,$,$);
#295=MILLING_TOOL_DIMENSION(15.000,$,$,$,$,$);
#296=CUTTING_COMPONENT(100.000,$,$,$);
#297=TURNING_MACHINE_TOOL("#298,(#300),$,$,$);
#298=USER_DEFINED_TURNING_TOOL(#299,.LEFT.,40,60,.CW.,10.0,$);
#299=TOOL_DIMENSION($,$,$,$,$,$,$,$,$);
#300=CUTTING_COMPONENT(40.000,$,$,$);
ENDSEC;
END-ISO-10303-21;

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