RETAA, RETAB

Return from subroutine, with pointer authentication. This instruction authenticates the address that is held in LR, using SP as the modifier and the specified key, branches to the authenticated address, with a hint that this instruction is a subroutine return.

Key A is used for `RETAA`. Key B is used for `RETAB`.

If the authentication passes, the PE continues execution at the target of the branch. For information on behavior if the authentication fails, see *Faulting on pointer authentication*.

The authenticated address is not written back to LR.

Integer

(FEAT_PAuth)

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1	1	0	1	0	1	1	0	0	1	0	1	1	1	1	1	0	0	0	0	1	M	1	1	1	1	1	1	1	1	1	1
							Z		op											A				Rn					Rm		

RETAA (M == 0)

```
RETAA
```

RETAB (M == 1)

```
RETAB
```

```
boolean use_key_a = (M == '0');

if !IsFeatureImplemented(FEAT_PAuth) then
    UNDEFINED;
```

Operation

```
GCSInstruction inst_type;
bits(64) target = X[30, 64];

bits(64) modifier = SP[];

if use_key_a then
    target = AuthIA(target, modifier, TRUE);
else
    target = AuthIB(target, modifier, TRUE);

if (IsFeatureImplemented(FEAT_GCS) && GCSPCREnabled(PSTATE.EL)) then
    if use_key_a then
        inst_type = GCSInstType_PRETAA;
    else
        inst_type = GCSInstType_PRETAB;
    target = LoadCheckGCSRecord(target, inst_type);
    SetCurrentGCSPointer(GetCurrentGCSPointer() + 8);

// Value in BTypeNext will be used to set PSTATE.BTYPE
BTypeNext = '00';

BranchTo(target, BranchType_RET, FALSE);
```

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